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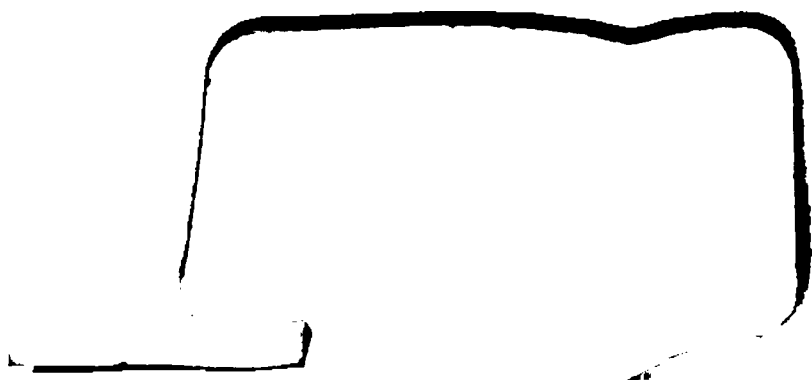
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To Y. Smith with
the complement &
best wishes of the
authors
E. B. Carey

THE JUNIOR R. O. T. C. MANUAL

**A Text Book For The Junior
Reserve Officers Training Corps**

BY

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FOREWORD.

The R. O. T. C. needs text books to permit its personnel to avail themselves of the expeditious instructional academic methods in use in all schools, both civil and military, of our country. The War Department, under the press of more urgent work, has as yet been unable to issue such books. In their absence this volume "The Junior R. O. T. C. Manual," written by earnest and able officers of our army will greatly aid in the acquirement of a good and quick knowledge of the elements of military training.

This volume is well arranged and fitted for both indoor and camp use. The adoption of pictorial instructional methods will prove specially useful to our young men who are accustomed to acquiring knowledge from illustrations. They furnish decided additions to former methods of teaching.

The subjects are treated in a clear, wholesome, instructive manner. The doctrine is substantially that of our best military teachers.

In the publication of this volume the authors have rendered great service to our country.

C. S. FARNSWORTH,
Major General, U. S. Army.

PREFACE.

TO AMERICAN MOTHERS AND FATHERS.

The purpose of this book is not to make soldiers out of your boys but to develop them physically, morally and mentally into the best type of citizens, capable of defending our flag should an emergency arise.

In addition to certain elementary and essential military drills, this book contains the following subjects with which every real boy should be familiar: Physical Training and Mass Games, How to Swim, How to Shoot (a pistol and rifle), Courtesy, Camping and Marching, Scouting, Map Reading, Leadership, First Aid and Personal Hygiene.

With the support of the parents, we hope to get the American boy outdoors and enjoying those activities which will develop that hardness and uprightness so common to the pioneers who founded this free country.

In presenting this Manual, we desire to thank The Johns Hopkins Press, our Distributor, and The Lord Baltimore Press, our Printer, for their courtesies, co-operation and efficiency.

For the authors,
E. B. GAREY.

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GENERAL INFORMATION ON MILITARY TRAINING.

The Army of the United States.

1. The Preamble to the Constitution of the United States declares that our government exists to “establish justice, insure domestic tranquility, *provide for the common defense*, promote the general welfare and secure the blessings of liberty to ourselves and our posterity.”

Congress, under the Constitution, is given full power “To declare war to raise and support armies to provide and maintain a navy to provide for organizing, arming, and disciplining the militia and to make all laws which shall be necessary and proper for carrying into execution the foregoing powers and all other powers vested by this Constitution.”

Acting under this authority and profiting by the experience of the World War, an act was passed on June 4, 1920, providing for the protection of the Republic against both external and internal foes by the creation of an Army composed of three distinct elements:

1. Regular Army.
2. National Guard.
3. Organized Reserves.

The Regular Army provides not merely an armed force to meet emergencies in the United States and elsewhere but an instrument to be used in the organization and training of the National Guard and Organized Reserves.

The second component, the National Guard, remains under the control of the several states except when called out by Congress to meet an emergency for which the Regular Army is not sufficient.

The third component, the Organized Reserves, provides the framework of the final defense of the nation in time of special emergency—a great citizen army in which every able-bodied man in the nation is already enrolled, though called to the colors only by the specific authority of Congress.

It is the purpose of the Junior Units of the R. O. T. C. to make this framework as strong and stable as possible. Every able-bodied citizen may under the Constitution, be called upon to defend his country and its sacred ideals and institutions from possible destruction. All who can should be *prepared* to serve.

As it is assumed that each student expects to become some day a reserve officer, there are parts of this text addressed to the reader as a prospective officer.

Value of Military Training.

2. To get the most out of your military training course, you should have a proper appreciation of its aim and purpose. Most of the qualities essential to a trained officer are likewise essential to success in civilian life. Therefore while in one sense the purpose of the R. O. T. C. is to train officers, in a larger sense it aims at instilling those qualities and principles into the students that make for better and more efficient citizens.

Military training will give you a sound body, a trained mind, and good morals, if you take it, not as a lesson in geometry, but as your first step in becoming an American citizen. Your study of mathematics, of physics, of Latin, is to develop your mind. The ultimate aim of your military training is to develop you into a patriotic, physically sound, upright, and disciplined citizen.

Patriotism.

3. The word patriotism means "love for one's country." This definition does not refer merely to the Fourth of July or to war times; it refers to every day in every year, to every hour in every day. A patriotic man during war is willing to die for the country he loves; during peace his patriotism does not cease to exist but prompts him:

1. To cheerfully pay his taxes for the support of his Government.
2. To study the national problems.
3. To always vote, and to vote for the best man or the best principle.
4. To obey the laws of his country and community.
5. And in your specific case to prepare yourself to train troops for war and if necessary to lead them in battle.

As a young man, show your love of country (patriotism) by developing yourself into a good citizen. Give evidence of your feelings by saluting the Flag when you pass it. Stand and uncover when the National Anthem is played. Be proud of the uniform you wear or may wear. Accept your military training in a spirit of service that you are giving the country.

Military Physical Training.

4. Football develops physically the football squad; baseball, the baseball squad; track work, the track team; *et cetera*. But these are as a rule the men who need it the least. They are naturally the strong men. Military calisthenics develop all undergoing instruction. Football, baseball or track work leave undeveloped certain important muscles, while intelligent, systematic calisthenics develop all the muscles without straining unduly the heart or any other vital organ.

What distinguishes a group of West Pointers from graduates of any other school? It is their physical set-up and general bearing. A man with a strong, healthy body, whether he becomes a soldier or a civilian, has a better chance in this world than a man with a weak or diseased body. As a nation, our citizens are beginning to lose the old pioneer hardiness that characterized our grandfathers.

One of the greatest duties in citizenship that a young man can perform is to submit his body to a systematic course of calisthenics while he is growing into manhood. You owe this to your country, to yourself and to your future children.

Look with pleasure upon the physical exercises. Put your whole heart and soul into the execution of the different movements. Develop your body so that to stand erect, head up, chin in, chest out, stomach drawn in, is comfortable; and to slouch is tiring.

Three Cardinal Military Virtues.

5. Military training has also for its purpose the development of *honest, just and faithful men*. *Honor* has always been one of the true soldier's virtues. A commander is *just* in his treatment of his men, he is *honest* in his relations with them, and he is *faithful* in the execution of every task assigned to him. Play the game yourself. Be as just, honorable, and faithful in your dealing with your instructors as they will be with you. Such virtues are no less necessary in civilian life. Let it become second nature for you to be just in all your dealings with others, to be honest in thoughts and deeds, and to be faithful in the execution of every task, large or small, that is assigned to you.

Discipline.

6. George Washington said: "A free people ought not only to be armed but disciplined." A lack of respect for authority is one of our greatest national defects. Military training corrects this defect. To obey is the watchword of a true soldier. To obey implies subordination to superiors and respect for authority. Our best citizens are disciplined men. A good citizen respects the officers of the law and obeys the laws. If you are to become a disciplined citizen you must recognize the authority of those over you, and promptly obey and respect them.

Discipline has been described as "the habit of obedience." It implies a control of the inner man. A disciplined man is self-controlled, especially during emergencies, when the undisciplined man goes to pieces. A man may have a desire to lie, or to take something that does not belong to him; he yields to this desire and becomes a liar, or a thief. Another man may have the same desires, but his self-control (discipline) masters them, and he retains his honor and self-respect. Such is the value of discipline. Discipline cannot be acquired in a day or a month; it is a growth. The main object of drills is to teach the habit of obedience. As soon as you obey properly, promptly, and at times subconsciously the instructions of your officers; as soon as you can cheerfully give up pleasure and personal privileges that conflict with your duty, you will then have become a disciplined citizen. Don't fall short of this ideal. Remember, obedience is the first and last duty of a soldier.

Loyalty.

7. To be loyal you must cheerfully, without question, and heartily obey the wishes of your superiors. A quarterback gives a signal for his football team. A good team executes this signal whether it is good or bad. What would you think of a fullback who refused to hit the line hard simply because he thought the quarterback was signalling a poor play? Loyalty means that you are for your boss and his business, for your organization and its officers. No soldier is a loyal soldier who is a knocker, or a grumbler, or a shirker. Therefore, frown upon knockers, grumblers and shirkers.

Dress.

8. The uniform you wear stands for Duty, Honor and Country. You should not disgrace it by the way you wear it or by your conduct any more than you would trample the flag under foot. You must bear in mind that in our country a military organization is too often unjustly judged by the acts of a few of its members. When one or two students in uniform conduct themselves in an ungentlemanly or unmilitary manner to the disgrace of the uniform, the layman shakes his head and condemns all men wearing the uniform. Hence, show, by the way in which you wear your uniform that you are proud of it. This can best be accomplished by observing the following rules:

1. Carry yourself at all times as though you were proud of yourself, your uniform and your country.
2. Wear your cap squarely on your head.
3. Have all buttons fastened.
4. Never have sleeves rolled up.
5. Never wear exposed sleeve holders or suspenders.
6. Never leave shirt or coat unbuttoned at the throat.
7. Have leggins properly wrapped or laced and trousers properly laced.
8. Keep shoes shined.
9. Always be clean shaved.
10. Keep head up and shoulders square.
11. See that your heels are not worn over on the side.
12. See that your hair is neatly cut.
13. See that there is no growth of hair on your neck.
14. Camp life has a tendency to make one careless as to personal cleanliness. Bear this in mind when you go to camp.

General Advice.

9. You may some day be an officer. You should then be the true mental and moral leader of your men. This is so whether you become a student officer or an officer in the army or reserve corps.

XII GENERAL INFORMATION ON MILITARY TRAINING

The average American wants his officers to be efficient and high-toned leaders. He wants them to be neat, to dress immaculately, and to be military in bearing. It thrills him to have their actions pitched in a high key. He wants to be well instructed. He wants to be led with tact and diplomacy. He wants to feel that there is no favoritism ; that justice prevails.

Be stern in discipline. Exact nothing less than the best in a man. Tolerate no slovenliness. Deal laziness a sharp rebuke. The great majority of your men are doing their level best. Let them know that this is what you expect, but at the same time that you appreciate them for it.

When a thing is wrong, say so. Explain the correct method. Do so calmly and efficiently. You have made worse mistakes yourself. Your men did not want to make the mistake. They did so from ignorance. It is possible that you have not made the matter clear to them, and the fault is yours not theirs.

Grow impatient, become excited and irritable and rebuke too severely an uninstructed man who has made a small unintentional mistake, use any words unworthy of your position—and you demonstrate clearly to your men your unworthiness to hold your office.

A Final Word.

10. Now it is proper to consider your relation to your immediate superiors. You have no business commanding unless you have first learned how to obey. The finer the training and caliber of an officer, the more sensitive is he to the wishes of his commanding officer, however, informally they may be expressed.

The ideal officer is a gentleman who has no task too small to faithfully perform whose country's welfare is above his own, who is ready for any sacrifice great or small ; whose thoughtfulness and efficiency last twenty-four hours a day, and whose relations with his superiors are based on modesty, cheerfulness, and loyalty.

PART I
FIRST YEAR

CHAPTER I.

INFANTRY DRILL REGULATIONS.

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INFANTRY DRILL REGULATIONS.

SCHOOL OF THE SOLDIER.

1. Success in battle is the ultimate object of all military training; success may be looked for only when the training is intelligent and thorough. Success in medicine or engineering, or anything else, must have intelligent and thorough training. So it is in the military world.

2. There are two kinds of drills—1st, Close order drill and, 2d, Extended order drill. In this course of instruction we will first give you close order drill.

Close order drill is an exact science. You should study these movements with the same care you would exercise in the solution of an experiment in the laboratory or a problem in geometry. All the movements have been worked out mathematically and to insure proper results must be executed *exactly*. Close order drills are always executed at ATTENTION. A soldier at attention is mentally and physically alert and ready to obey any order from his superiors. Close order drills and ceremonies, such as parades and reviews, have a very definite purpose in the training of the soldier. They constitute the very A, B, C's of military information. They are designed to teach precise and soldierly movements and the "habit of obedience" which is essential to military control.

To this end it is the duty of every man to be a model of neatness, to be alert mentally and physically, and to do everything that he is called upon to do with smartness and precision.

When you get to be a leader remember to have drills at ATTENTION frequently, but make them short. Also remember that you yourself must be the model of neatness, or a model soldier so that your men will have a constant picture of their ideal before their eyes.

3. Commands only are employed in drill at attention. A command in this book is the will of the commander expressed in exact words. You are studying to become an instructor. Therefore, it is absolutely essential that you memorize the commands in order to properly convey your will to your men. To give your commands in any other way than specified herein is incorrect, inefficient and will get you nowhere.

There are two kinds of commands—The preparatory command and the command of execution.

The *preparatory* command, such as *forward* indicates the movement that is to be executed.

The command of execution, such as MARCH, HALT, or ARMS causes the execution.

The importance of giving commands correctly cannot be over emphasized. The better the commands are, the better the drill will be. The student at this time should expect his officer to pronounce his commands as they are spelt and that every syllable be given its proper weight. Also that a constant interval of time be required between the preparatory command and the command of execution.

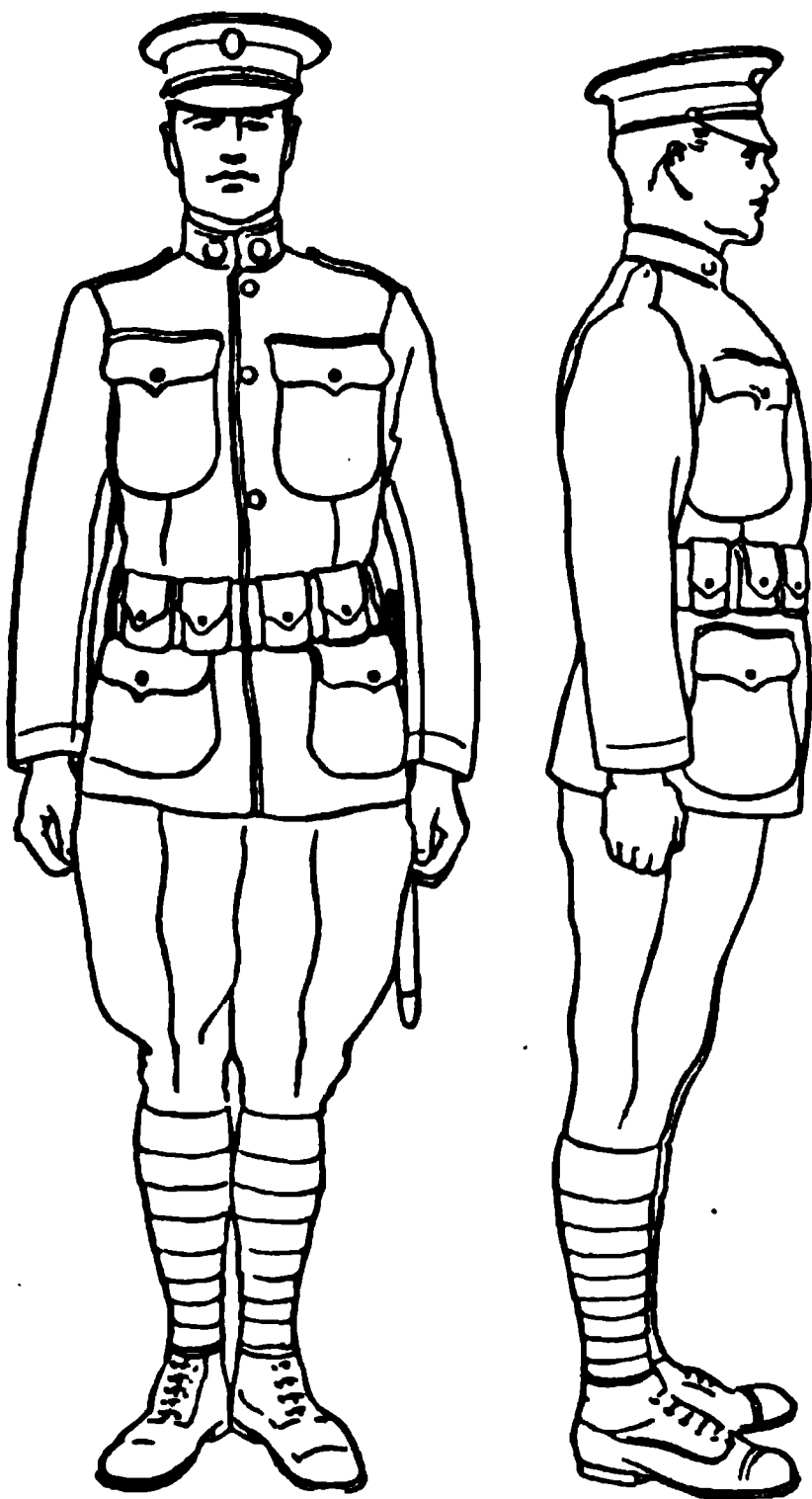


PLATE 1.
Position of the Soldier at ATTENTION.

sequence is followed than it is to trust to the memory to recall all the various parts of the body that are mentioned.

Many students think they are "at attention" when they assume the position described above. Such is not the case unless the mind is also at attention and ready to instantly obey any command that is given.

Caution. Keep the mind, as well as the body at attention, and observe these don'ts:

Don't gaze about, that's not playing the game. (No. 1, Plate 2.)

Don't turn your feet out making an angle of about 90° .

Don't slouch. (No. 2, Plate 2.)

Don't ever look at your toes or down at the ground.

A Final Don't.

Don't turn the back of the hands to the front; turn the back of the hands out.

Position of Soldier at Attention.

4. Heels on same line and as near each other as possible.

Feet turned out equally and forming an angle of about 45° .

Knees straight without stiffness.

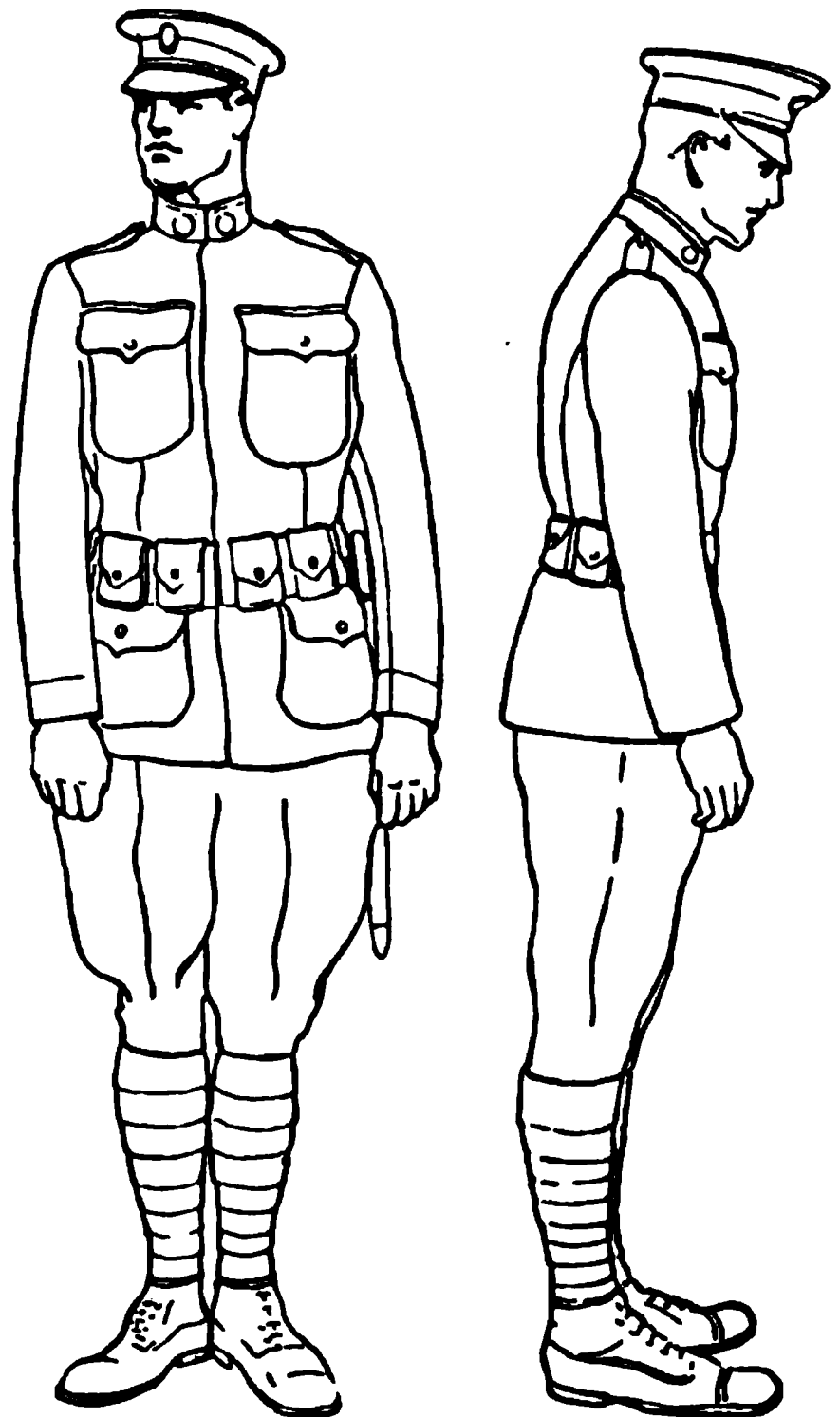
Hips level and drawn back slightly; body erect and resting equally on hips; chest lifted and arched; shoulders square and falling equally.

Arms and hands hanging naturally, thumb along seam of the trousers.

Head erect and squarely to the front, chin drawn in so that the axis of the head and neck is vertical, eyes straight to the front.

Weight of body resting equally upon the heels and balls of the feet.

Note the order in which this position is described—heels, feet, knees, hips, chest, shoulders, arms, hands, head, chin, eyes and weight of entire body. Thus we see that it commences with the heels and goes to the eyes and then takes up the entire body. It is easier to learn such a description if a



No. 1.

No. 2.

PLATE 2.

Incorrect Positions of ATTENTION.

The Rests.

(There are 4 Kinds.)

5. Being at a halt, the commands may be: FALL OUT; REST; AT EASE and, 1. *Parade*, 2. REST.

At the command FALL OUT, the men may leave the ranks, but are required to remain in the immediate vicinity. They resume their former places, *at attention*, at the command FALL IN.

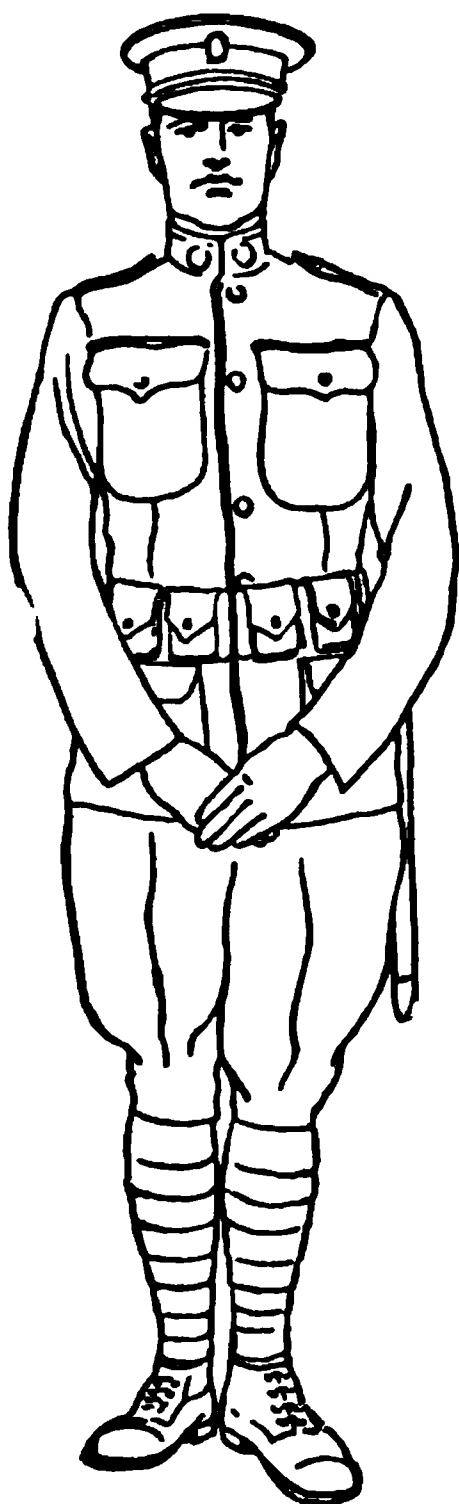
6. At the command REST, each man keeps one foot in place, but is not required to preserve silence or immobility. This means he can talk, blow his nose, gaze about, etc.

7. At the command AT EASE, each man keeps one foot in place and is required to preserve silence but not immobility. This means that he must not talk but may move one foot, may gaze about, etc.

It is not healthy to fold the arms across the chest or to rest the weight of the body on one leg when standing AT EASE or at REST. In the former case it interferes with the breathing when a full expansion of the lungs is desirable and in the latter case it produces curvature of the spine by causing an unequal pressure on the spinal column. It is believed that the position of AT EASE as shown in Plate 3 in this text is both healthy and restful. While it is not required by regulations it is sanctioned by use.



PLATE 3.
AT EASE.



No. 1.



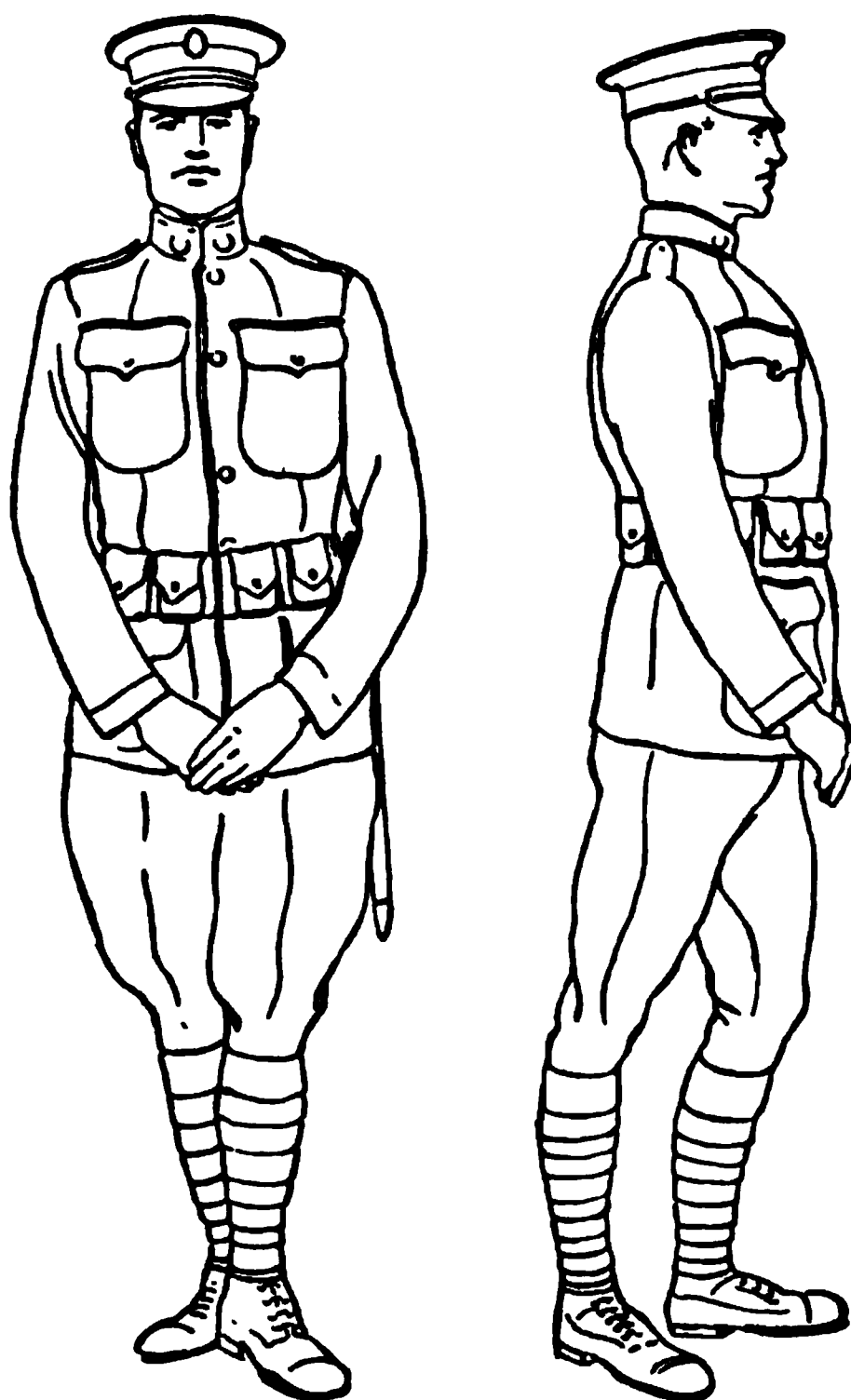
No. 2.

PLATE 4.
1. *Parade*, 2. REST.

Caution. Let your men be AT EASE when you are giving them instructions and at REST when you want them to rest. Give short and frequent rests.

When your men are standing at ease and receiving instruction or corrections, you (instructor) should be at attention. An instructor has not time to rest and if he gives sufficient instruction and makes proper corrections there is no necessity for the men to have a rest except during prescribed rest periods.

8. *Parade rest.* The command is 1. *Parade*, 2. REST. (No. 1, Plate 4.) Clasp hands without constraint in front of center of body. Left hand uppermost. Fingers joined. Thumb and forefinger of right hand clasps the left thumb. (No. 2, Plate 4.) *Bend left knee slightly* (not to do so is a common error). Right foot is carried 6 inches straight to the rear. Preserve silence and steadiness of position.



No. 1.

No. 2.

PLATE 5.
Common Errors.

Common errors. (No. 1, Plate 5.) Not looking straight to the front. Right foot not carried straight to the rear. (No 2, Plate 5.) Bending back at waist instead of breaking forward over hands. Right foot carried back too far. (The most common error.)

9. To resume the position of attention the following commands are given: 1. *Squad*, 2. ATTENTION. The men take the position of the soldier at the last syllable of the word attention. It is a common error to dangle the hands and move around in ranks upon resuming the position of attention, instead of coming to this position quickly and then remaining motionless.

Eyes Right or Left.

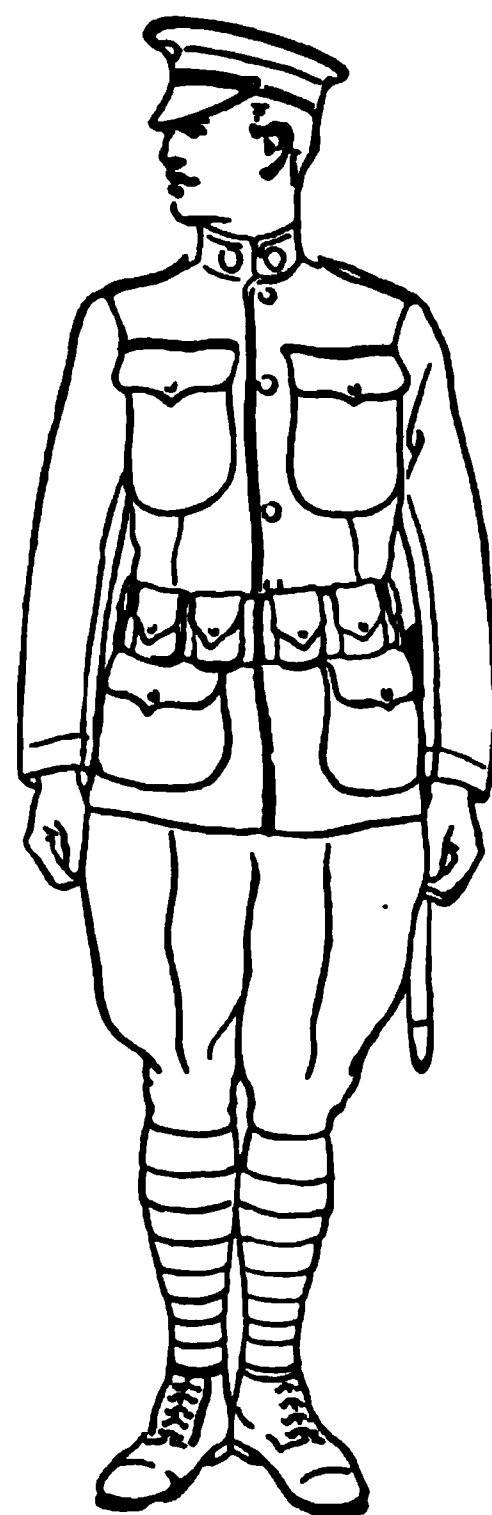
10. 1. *Eyes*, 2. RIGHT (LEFT), 3. FRONT. At the command RIGHT, turn the head to the right oblique, eyes fixed on the line of eyes of the men in, or supposed to be in, the same rank. At the command FRONT, turn the head and eyes to the front with a snap.

Eyes right is used in dressing a line of men and to render the salute to the reviewing officer when troops are passing in review during ceremonies. The original idea of executing eyes right at ceremonies was to permit the troops to see the reviewing officer.

Cautions. Don't twist the body, keep it square to the front.

Don't draw the chin down.

Be careful that you do not change the position of your rifle when you execute eyes right when marching at right shoulder arms.

PLATE 6.
1. *Eyes*, 2. RIGHT.

Facings.

11. The command to face to the flank is: 1. *Right (Left)*, FACE. At the command FACE, raise slightly the left heel and right toe; face to the right (that is, turn 90° to the right), turning on the right heel assisted by a slight pressure on the ball of the left foot; place the left foot smartly by the side of the right. Left face is executed on the left heel in the corresponding manner.

Right (left) half FACE is executed similarly, facing 45°. "To face in marching" and advance, turn on the ball of either foot and step off with the other foot in the new line of direction; to face in marching without gaining ground in the new direction, turn on the ball of either foot and mark time.

Cautions. Don't look down when you execute this movement.

Don't exaggerate the foot movements. For instance in executing "right face" bring the left foot in a straight line to the right heel and keep the left foot close to the ground.

12. To the rear. 1. *About*, 2. FACE.

At the command FACE carry the toe of the right foot about a half-foot length to the rear and slightly to the left of the left heel (about three inches) without changing the position of the left foot; face to the rear, turning to the right on the left heel and right toe; place the right heel by the side of the left. This movement is executed in one count. There is no left about face. Don't look down at your feet while executing it. Practice the movement out of ranks until you know exactly where to place your right toe in order to bring the heels together when you face about.

Cautions. Don't spend much time teaching your men this movement. Have them practice it at odd times both in and out of ranks. The best results are obtained if you insist on your men keeping their legs stiff in executing about face.

In executing all the facings the hands should be kept at the side of the body. That is, they remain still and are therefore not dangled or swung.

Salute with the Hand.

13. 1. *Hand*, 2. SALUTE. This movement is executed and completed in two counts.

At the command SALUTE, raise the right hand smartly till the tip of the forefinger touches the lower part of the headdress or forehead above the right eye, thumb and fingers extended and joined, palm to the left, forearm inclined at about 45°, hand and wrist straight; at the same time look toward the person saluted. (TWO) drop the arm smartly by the side.

Note the manner in which this movement is described: The right hand is brought to the forehead, the description then starts with the forefinger and continues thus, thumb, all the fingers, palm, forearm, hand, wrist, eyes and then completes the cycle by dropping the hand to the side. This sequence will assist you in quickly learning the movement.



PLATE 7.
1. *Hand*, 2. SALUTE.

Be proud of your salute. See how perfect you can make it. Don't commit any of these common errors:

No. 1, Plate 8. Palm of the hand to the front and fingers not joined.

No. 2, Plate 8. Arm held too high. Fingers not perfectly joined.

No. 3, Plate 8. Fingers not extended and joined. Left hand not by side while salute is being made.

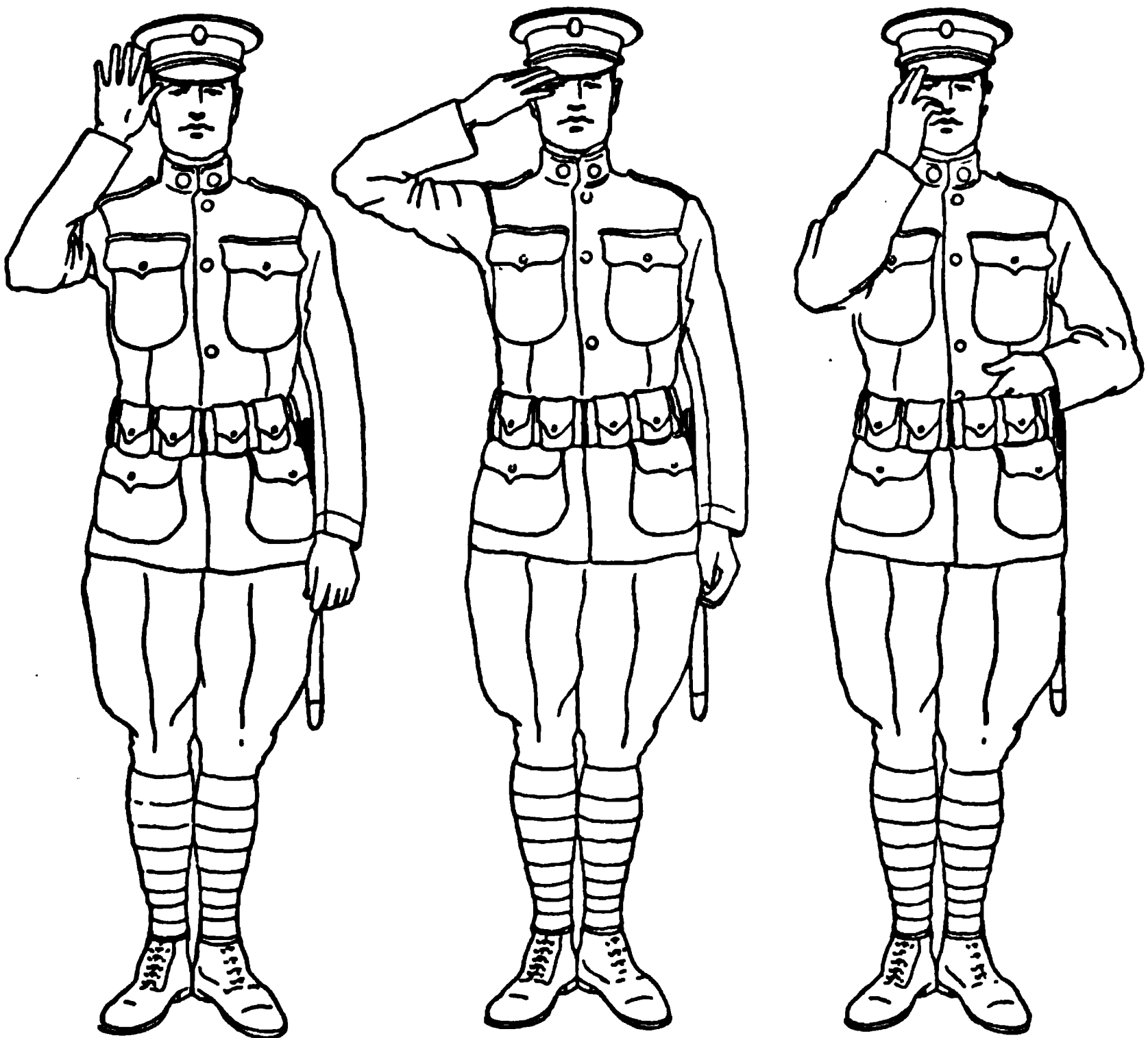


PLATE 8 (Nos. 1, 2 and 3).—Common Errors.

Some beginners forget, while saluting, to remove their pipes, cigarettes, or cigars from their mouths. This proves clearly that they are beginners, for trained and experienced men are careful about military honors and salutes.

General Rules for Steps and Marchings.

14. All steps and marchings executed from a halt, except right step, begin with the left foot.

15. The length of the full step in quick time is 30 inches, measured from heel to heel, and the cadence is at the rate of 128 steps per minute. The length of the full step in double time is 36 inches; the cadence is at the rate of 180 steps per minute.

It is a good plan to lay off a course of 106½ yards on the drill ground and practice the guides and new men in taking 128 steps at a quick time in going over it. A similar method should be used in training them to take the correct step and cadence at a double time.

The instructor should, when necessary, at drill, indicate the cadence of the step by calling one, two, three, four; or left, right, the instant the left and right foot, respectively, should be planted. An inexperienced instructor has a tendency to count too much with the result that the men rely on him keeping them in step. Therefore, don't get in the habit of singing out, one, two three, four to your men all the time. Train them to get in the habit of keeping the step by observing the swing of the shoulders and arms of the men in front.

16. The command of execution for all movements to be executed while marching is given as either foot strikes the ground, except as otherwise specifically prescribed in this text; the movement commences when the following foot is planted. We have adapted this simple rule regarding the foot upon which the command of execution should be given to obtain the best results and the cleanest execution of each movement. For example: Suppose we are to execute 1. *By the left flank*, 2. MARCH and the command MARCH is given when the left foot strikes the ground. This rule states that the right foot would be advanced and planted before the movement to the flank would commence.

In all changes of direction to the right, the command of execution should come on the right foot and in all changes of direction to the left, on the left foot; this includes the obliques.

17. All steps and marchings and movements involving march are executed in quick time unless the squad be marching in double time, or double time is added to the preparatory command. Example: 1. *Squad right, double time*, 2. MARCH.

18. Being at a halt to march forward in quick time: 1. *Forward*, 2. MARCH. At the command forward, shift the weight of the body to the right leg, left knee straight.

At the command MARCH, move the left foot smartly forward 30 inches from the right, sole near the ground, and plant it without shock; next, in like manner advance the right foot and plant it as above; continue the march. The arms swing naturally.

Cautions. Don't move the body perceptibly when you shift the weight to the right leg. Take the full 30-inch step on the "step-off." Don't lean forward in anticipation of the command MARCH.

Keep the foot close to the ground. Snap the heel out as you step off.

19. Being at a halt, or in march in quick time, to march in double time, the command is: 1. *Double time*, 2. MARCH.

If at a halt, at the first command, shift the weight of the body to the right leg. At the command MARCH raise the forearms, fingers closed (palms towards the body), to a horizontal position along the waist line; take up an easy run with the step and cadence of double time. (*The length of the full step in double time is 36 inches; the cadence 180 steps per minute*), allowing a natural swinging motion to the arms.

If marching in quick time, at the command MARCH, given as either foot strikes the ground, take one step in quick time and then step off in double time. For instance, if the command MARCH is given as the right foot strikes the ground, advance and plant the left foot in quick time and then step off in double time with the right foot.

20. To resume the quick time: 1. *Quick time*, 2. MARCH. At the command MARCH, given as either foot strikes the ground, advance and plant the other foot in double time; resume the quick time, dropping the hands by the sides. For instance, if the command MARCH is given as the left foot strikes the ground, advance and plant the right foot at a double time and then take up the quick time with the left foot.

• **Caution.** Don't attempt to give the command 1. *Quick time*, 2. MARCH unless you too are executing a double time and in step with your men. An inexperienced instructor will often give this command while he himself is at a halt or at a quick time, with the result that the command MARCH is not given at exactly the right time and the men do not resume the quick time together. The experienced drill-master keeps in step with his men; when they "mark time," "double time," or execute "quick time," he does likewise.

To Mark Time.

21. Being in march: 1. *Mark time*, 2. MARCH.

At the command MARCH, given as either foot strikes the ground, advance and plant the other foot; bring up the foot in rear and continue the cadence by alternately raising each foot about 2 inches and planting it on line with the other. For example, if the command MARCH is given as the left foot strikes the ground, advance and plant the right foot and then bring up the left foot and plant it by the right foot and continue the cadence by alternately raising each foot as described above. The tendency of running up the cadence when marking time is greatly lessened if the toe is raised 2 inches from the ground and the foot planted toe first. In other words the sole is not parallel to the ground.

Being at a halt: 1. *Mark time*, 2. MARCH.

Being at a halt, at the command MARCH, raise and plant first the left foot, then the right as described above. If armed with the rifle bring it to the right shoulder.

Caution. Don't raise your feet too high or increase the cadence, *i. e.*, go too fast.

To Halt.

22. To arrest the march in quick or double time: 1. *Squad*, 2. HALT. At the command HALT, given as either foot strikes the ground, plant the other foot as in marching; raise and place the first foot by the side of the other. For instance, if the command HALT is given as the left foot strikes the ground, advance and plant the right foot and then bring up the left foot beside it.

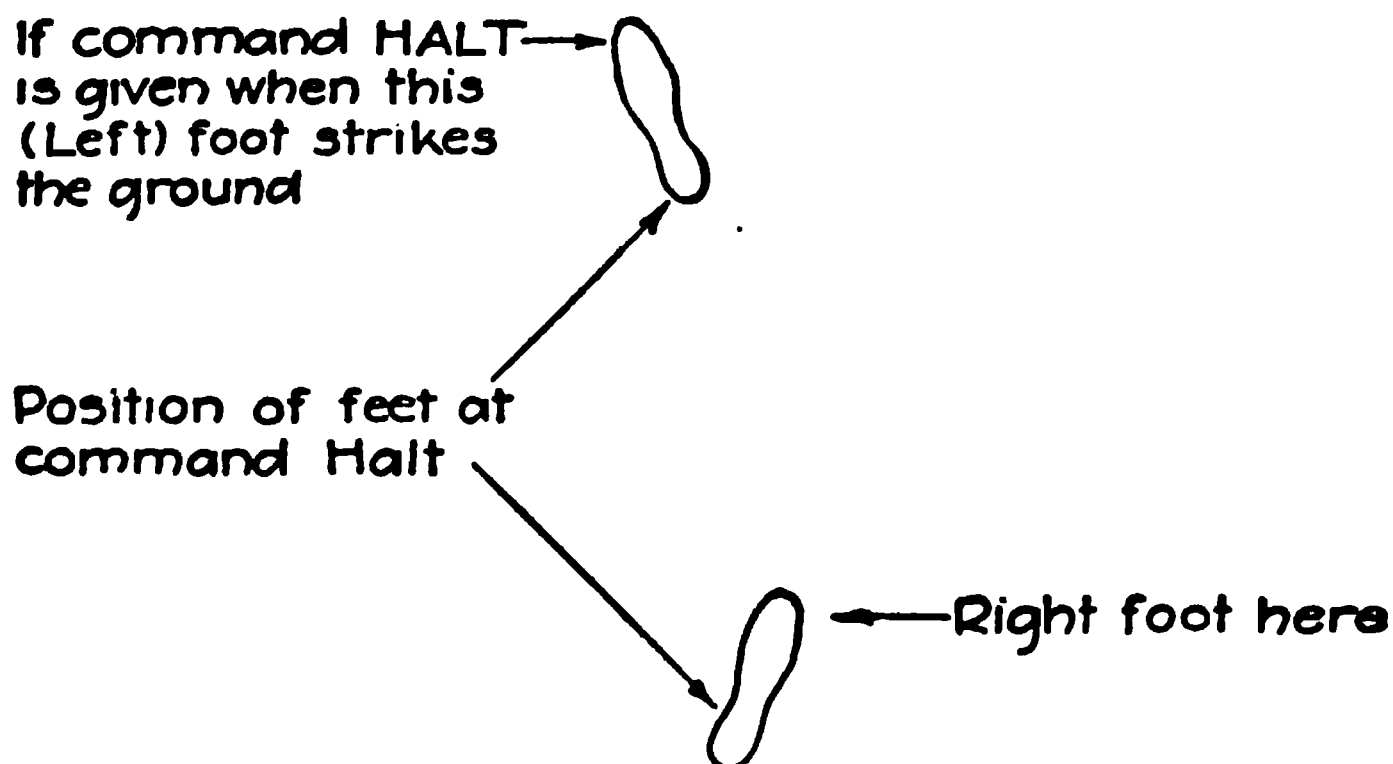


PLATE 9.—Showing How HALT is Executed.

If the command HALT is given while marching at a double time, drop the hands by the side just as soon as the halt has been made, otherwise the halt is executed as described above.

If marking time and the command HALT is given, take two counts in halting as just explained. For instance, if the command HALT is given as the left foot strikes the ground, raise and plant the right foot by the side of the left (count one) and then raise the left foot and plant it by the side of the right and halt.

The Half Step.

23. 1. *Half step*, 2. MARCH.

Take steps of 15 inches in quick time; 18 inches in double time.

Caution. When you wish to move your men forward a very short distance at a half step, it is best to command 1. *At trail*, 2. *Half step*, 3. MARCH.

Forward, half step, halt and mark time may be executed from one to the other in quick or double time.

Notice that under this rule you may have your men step off at a half step from a mark time.

24. To resume the full step from half step or mark time: 1. *Forward*, 2. MARCH.

In connection with this command, remember the rule to take one count before commencing the new movement. For instance, if your men are at a half step and you command: 1. *Forward*, 2. MARCH. Assume that the command MARCH is given as the left foot strikes the ground, advance and plant the right foot 15 inches to the front and step off with a 30-inch step with the left foot.

Side Step.

25. Being at a halt or mark time: 1. *Right (left) step*, 2. MARCH.

At the command MARCH, carry and plant the right foot about 15 inches to the right; move the left foot beside it and continue the movement in the cadence of quick time.

The side step is used for short distances only and is not executed in double time.

If at order arms, the side step is executed at *trail* without command.

Notice that under this rule you may execute a side step from mark time.

Caution. When executing a half step get in front of your men and execute it with them so they can keep in step with you, otherwise they have great difficulty in keeping in step. It is an excellent plan for everyone to make a distinct *crack* with their heels in bringing their feet together; to do so assists in keeping down the cadence, whereas, the most common tendency with new men is to increase it. The second error most usually committed is not taking anything like the required 15 inches. The step taken is usually about 8 to 10 inches.

In halting from a side step the command of execution (HALT) should be given when the feet are together.

If executing right step give the command of execution HALT as the left foot hits the ground and as the right foot hits the ground if executing left step, otherwise you cannot halt in two counts. A good drill-master studies exactly when to give his command of execution for each movement.

Back Step.

26. Being at a halt or mark time: 1. *Backward*, 2. MARCH. At the command MARCH, take steps of 15 inches straight to the rear, commencing with the left foot.

The back step is used for short distances only and is not executed in double time.

If at order arms the back step is executed at *trail* without command.

Caution. An inexperienced instructor wastes a lot of time giving such movements as side step and the back step whereas once they are correctly explained and the beginners start to execute them correctly, proficiency is soon acquired. A good drill-master must constantly consider the importance of the various movements and spend the most time on important ones.

To March by the Flank.

27. Being in march: 1. *By the right (left) flank*, 2. MARCH.

At the command MARCH given as the right foot strikes the ground, advance and plant the left foot, then face to the right in marching (that is on the ball of the left

foot) and step off in the new direction with the right foot. If the command is by the left flank the command MARCH must be given as the left foot strikes the ground. This is an important movement for the beginner in that it helps him to get over his clumsiness.

Caution. Be sure that a 30-inch step is taken when stepping off in the new direction.

To March to the Rear.

28. Being in march: 1. *To the rear*, 2. MARCH.

At the command MARCH, given as the right foot strikes the ground, advance and plant the left foot; turn to the right about on the balls of both feet and immediately step off with the left foot. The command MARCH must be given as the right foot strikes the ground.

If marching at double time, turn to the right about, taking four steps in place, keeping the cadence and then step off with the left foot.

Caution. Be sure that a 30-inch step is taken in the first step to the rear. The tendency is to take too long a step.

Change Step.

29. Being in march: 1. *Change step*, 2. MARCH.

At the command MARCH, given as the right foot strikes the ground, advance and plant the left foot; plant the toe of the right foot near the heel of the left and step off with the left foot.

The change on the right foot is similarly executed, the command MARCH being given as the left foot strikes the ground.

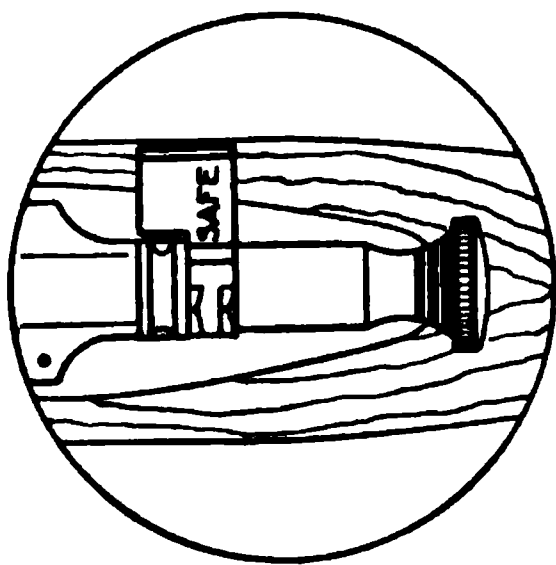
Caution. As this is not a very important movement, you should not waste much time on it. Explain it, do it, have your men do it a time or two, then go on with another movement but ask your men to practice it at odd times.

At the Infantry School at Camp Benning they require the soldier in executing a change of step at a double time to take two hops on one foot and then step off on the other foot.

Manual of Arms.

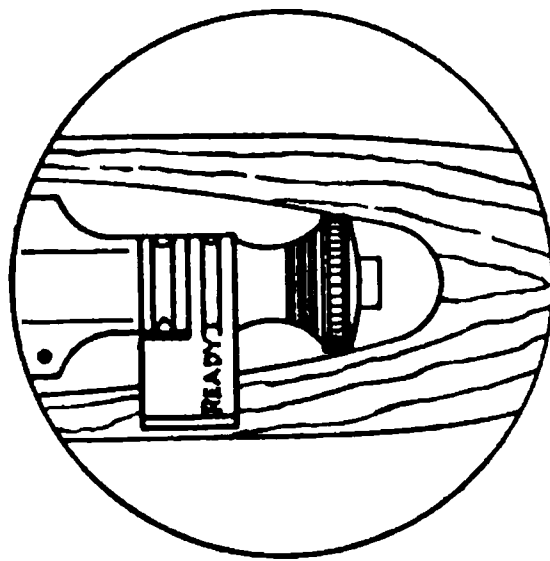
30. As soon as practicable the recruit is taught the use, nomenclature (names of various parts) and care of his rifle. When fair progress has been made in the instruction without arms, he is taught the manual of arms; instruction without arms and that with arms alternate. In describing the manual of arms, the term "at the balance" in this text refers to the actual center of gravity of the Model 1903 Rifle.

Don't attempt to memorize the rules governing the carrying of the rifle. The first thing to do is to learn the parts of the rifle and you will soon absorb these rules, which if studied before you get or understand the rifle are hard.



No. 1.

When loaded it is carried in this position



No. 2.

When not loaded it is carried in this position.

31. The following rules govern the carrying of the piece (rifle):¹

First. The piece is not carried with cartridges in either the chamber or magazine except when specifically ordered. When so loaded, or supposed to be loaded, it is habitually carried locked, that is, with the *safety lock* turned to the "safe" (see No. 1, Plate 10). At all other times it is carried unlocked with the trigger pulled (see No. 2, Plate 10).

This rule will become perfectly clear to you as soon as you receive your rifle and know what the safety lock is.

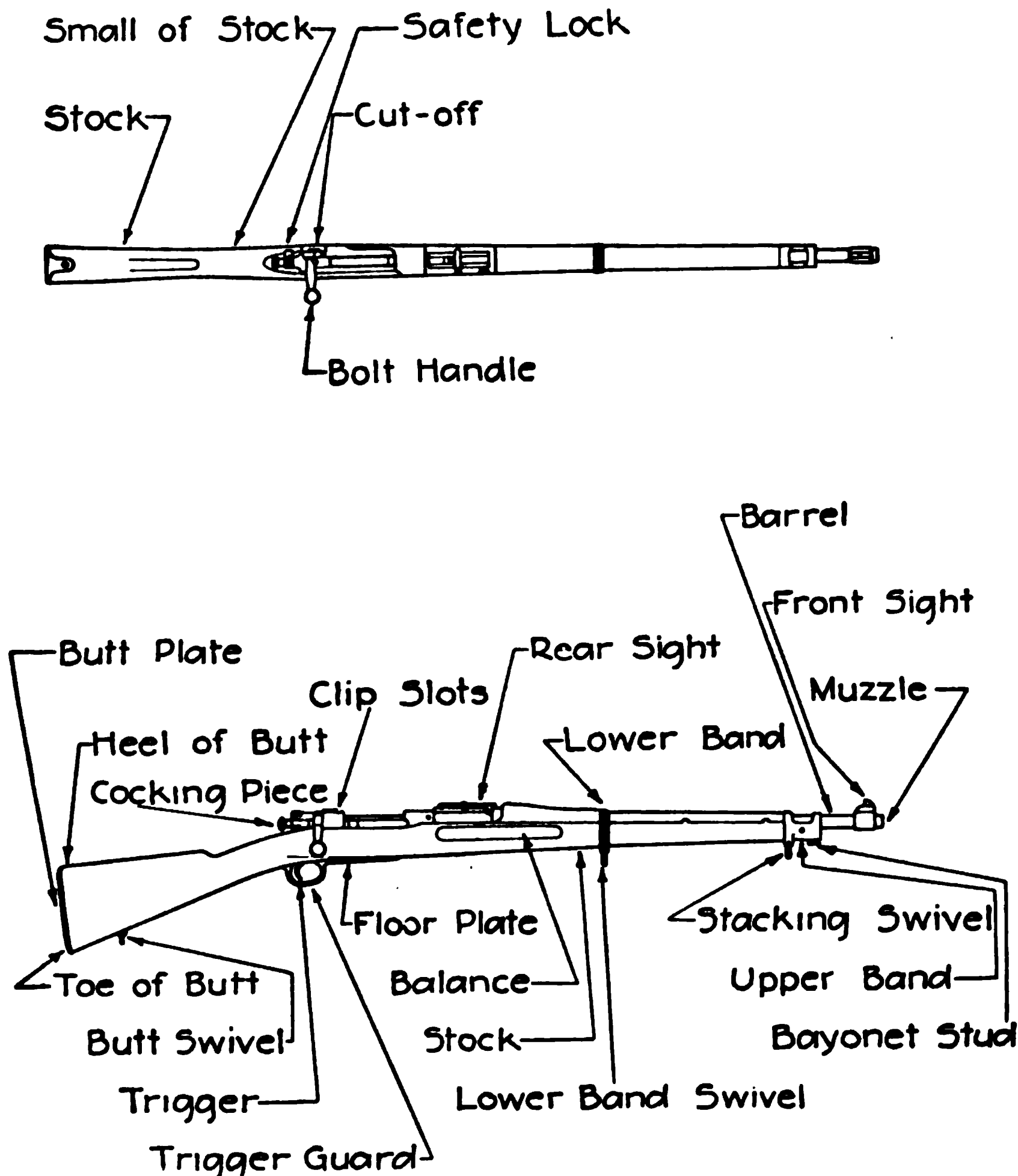


PLATE II.—United States Magazine Rifle, Caliber .30, Model 1903.

Second. Whenever troops are formed under arms, pieces are immediately inspected at the commands: 1. *Inspection*, 2. *ARMS*, 3. *Order (right shoulder, port)*, 4. *ARMS*.

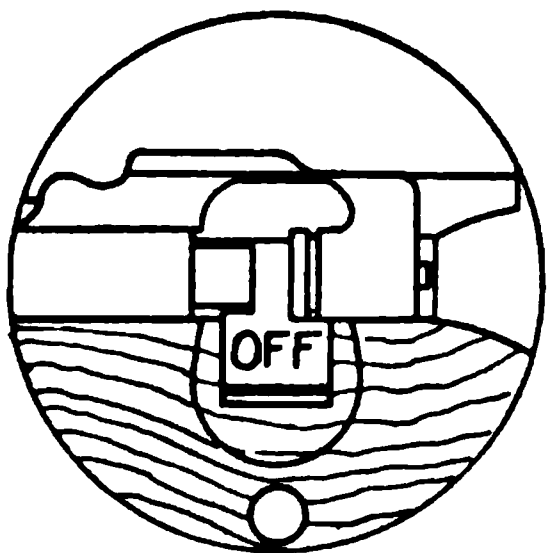
A similar inspection is made immediately before dismissal.

If cartridges are found in the chamber or magazine, they are removed and placed in the belt.

This rule pertains more to the drill-master than it does to the beginner.

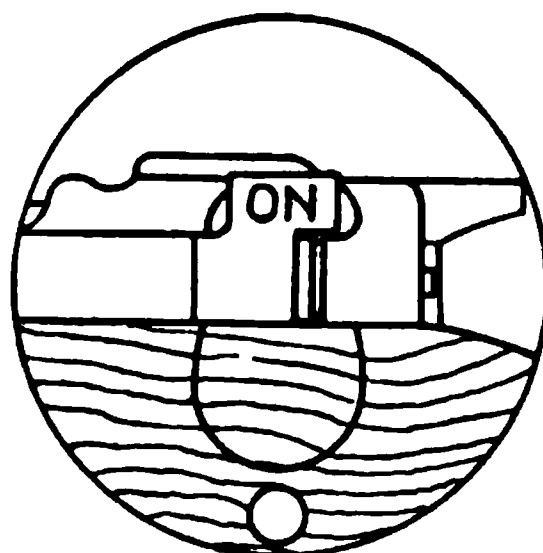
¹ The rules for the carrying of the piece are technical and very difficult for the beginner to understand until he has used the rifle for some time and becomes familiar with the names of its various parts.

Third. The cut-off is kept turned "off" except when cartridges are actually used. (See Plate 12.)



No. 1

When cartridges are not used
turn the cut off to this position.



No. 2

When cartridges are used
turn the cut off to this position.

PLATE 12.—The Two Positions of the Cut-Off.

NOTE.—The instructor should explain the necessity for the three above rules. Their purpose is to insure the safety of the beginner and his comrades.

Fourth. The bayonet is not fixed except in bayonet exercise, on guard, at ceremonies or for combat.

Notice there are only four occasions when the bayonet is fixed.

Fifth. FALL IN is executed with the piece at the order arms. FALL OUT, REST and AT EASE are executed as without arms.

Sixth. If at the order, unless otherwise prescribed, the piece is brought to the right shoulder at the command MARCH, the three motions corresponding with the first three steps. This means that you always come to the right shoulder arms when you step off, unless otherwise instructed. Movements may be executed at the trail by prefacing the preparatory command with the words *at trail*, as 1. *At trail*, 2. *Forward*, 3. MARCH. The trail is taken at the command MARCH.

When the facings (such as right face), alignments (such as right dress), open and close ranks, taking interval or distance, and assemblings are executed from the order, raise the piece to the trail while in motion and resume the order on halting.

Seventh. The piece is brought to the order on halting. The execution of the order begins when the halt is completed. A common error is to start to come to the order arms before the halt is completed. Practice in calling the numbers ONE, TWO for the halt, and follow in cadence with ONE, TWO, THREE for the order, will help to correct this fault.

Eighth. The disengaged hand (left) in double time is held as when without arms (swing it at the waist).

Keep clearly in mind that the purpose of these rules is to govern the carrying of the rifle and it will assist you in learning them. This is especially true if you will realize that they can be divided into two general classes, namely, those intended to prevent accidents and those to assist you in handling the rifle.

32. The rules given in the preceding lesson are of a general nature pertaining to the carrying of the rifle; whereas the following rules are the A, B, C's of the Manual of Arms. In fact they govern the execution of the Manual of Arms and should therefore be carefully studied. If you understand them it will not be difficult to learn the Manual of Arms.¹

¹ Note for Instructor: Make certain that your men understand these rules. Each rule should be demonstrated with a rifle.

First. In all positions of the left hand at the balance (center of gravity, bayonet unfixed), the thumb clasps the piece; the sling is included in the grasp of the hand. This rule is very important because a great many times in executing the manual of arms the left hand should grasp the piece at the balance, hence the center of gravity of the rifle should be accurately known. (See Plate 13.)

PLATE 13.
Position of Left Hand
at the Balance.

Second. In all positions of the piece "diagonally across the body," the position of the piece, left arm and left hand are the same as in port arms. The position of the piece "diagonally across the body" is one of the key positions in the manual of arms. It is common to more movements than any other position of the piece.

PLATE 14.
Position of Piece Diagonally
Across the Body.

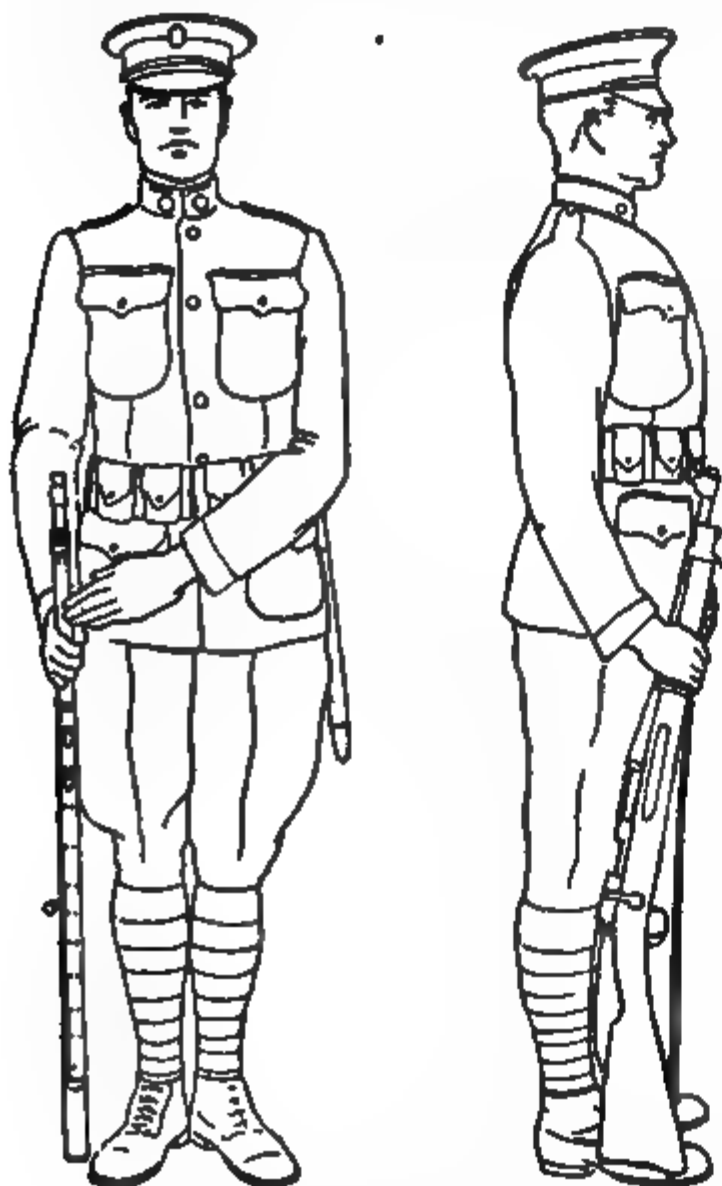


PLATE 15.—Next to the Last Position in Coming to ORDER ARMS.

JM-3

Third. In resuming the order from any position in the manual, the next motion to the last concludes with the butt of the piece about 3 inches from the ground, barrel to the rear, the left hand above and near the right steadying the piece, fingers extended and joined, forearm and wrist straight and inclining downward, all fingers of the right hand grasping the piece. To complete the order lower the piece gently to the ground with the right hand, drop the left hand quickly by the side and take the position of order arms.

While this is a very common position in executing the manual of arms it is a very difficult one for the beginner to learn. After studying the illustration, get your rifle, take up this position and get someone to correct it, using the illustration in this text as a guide.

Allowing the piece to drop through the right hand to the ground, or other similar abuse of the rifle to produce effect in executing the manual is prohibited.

Fourth. The cadence (speed of executing the manual of arms) of the motions is that of quick time; the recruits are first required to give their entire attention to the details of the motions, the cadence being gradually acquired as they become accustomed to handling their pieces. The instructor may require them to count aloud in cadence with the motions.

The gist of this rule is—the cadence of the manual of arms is that of quick time (128 beats per minute).

Fifth. The manual is taught at a halt and the movements are, for the purpose of instruction, divided into motions and executed in detail; in this case at the command of *execution*, execute promptly the first motion and at the commands, two, three, four, the other motions.

To execute the movements in detail, the instructor first cautions, BY THE NUMBERS; all movements, divided into motions, are then executed singly. That is to say, make one motion and then wait until the next count before executing another movement. This is for the purpose of correcting erroneous positions and giving detailed instructions. The meaning of this rule will become clear to you as soon as you commence drilling with the rifle. All movements are explained in this text as if executed by the numbers. When the instructor wishes to discontinue executing the manual of arms BY THE NUMBERS he either cautions WITHOUT THE NUMBERS or commands movements other than those in the manual of arms.

Sixth. Whenever circumstances require, the regular positions of the manual of arms and the firings may be ordered without regard to the previous position of the piece.

You have little to do with this rule which pertains to an emergency arising in battle.

Under exceptional conditions of weather or fatigue, the rifle may be carried in any manner directed.

Usually the rifle is carried at right shoulder arms but in rainy weather or on long marches it may be carried so as to keep the bolt dry or in the least fatiguing manner.

A final rule—To acquire proficiency in the manual of arms, you must practice and practice and practice.

33. There is no easy way to learn the manual of arms. It requires a great deal of study and practice. It is not sufficient for a drill-master to know how to execute the manual of arms; he must know how to explain each movement in detail and this requires study.

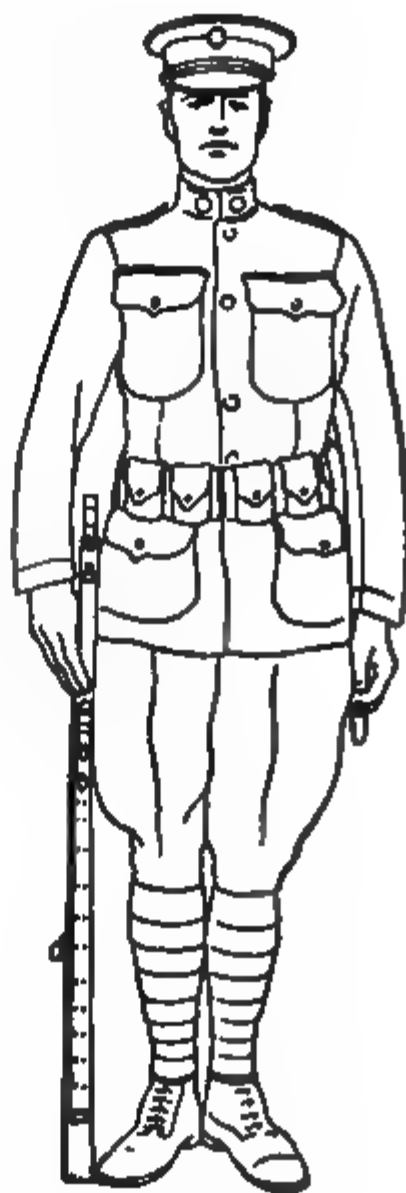
Proficiency in executing the manual of arms can be attained by constant practice at odd times. Get your rifle and execute the manual of arms by the numbers. Ask some one to check each position against the illustrations in the text. Get in front of a large mirror and execute the manual of arms and check each movement yourself. And as a final check execute the manual of arms without the numbers and with your eyes shut. When you can do this to the satisfaction of one or more critical friends you can assume that you are reasonably proficient. Study without practice will not make you proficient.

The following rule will assist you in learning the manual of arms: When your instructor says your rifle is in a correct position make a mental note of how it (rifle) feels. Notice where it is with respect to some part of your body or clothes. For example, let us assume you have executed 1. *Present*, 2. ARMS correctly. You should not only remember how the piece felt when it is in the correct position, but also what part of the barrel was directly in front of your eyes.

34. Position of order arms standing, i. e., the position of attention at order arms.

Plate 16, No. 1. Arms and hands hang naturally. Right hand holding rifle between thumb and fingers. Butt rests evenly on the ground. Barrel to the rear.

Plate 16, No. 2. Toe of the butt on a line with toe of and touching the right shoe. The right hand holding the rifle between the thumb and fingers.



No. 1. No. 2.
PLATE 16.—(Front and Side View.)



No. 1. No. 2.
PLATE 17.

35. Being at order arms: 1. *Present*, 2. ARMS. This movement is done in two counts.

At the command ARMS, with the right hand carry the rifle in front of the center of the body. Barrel to the rear and vertical. Grasp it with left hand at the balance. *Left forearm is horizontal and rests against the body.* (See Plate 17, No. 1.)

At the command TWO, grasp the small of the stock with the right hand. (See Plate 17, No. 2.)

Learn what part of the rifle is opposite your eyes when it is in the correct position of 1. *Present*, 2. ARMS. You can then check up on your position.



PLATE 18.
Incorrect
Positions.

These are common errors made by beginners (Plate 18):

- No. 1. Left thumb along barrel.
- No. 2. Rifle held too low. The front sight will be a little above the eyes when the left forearm is horizontal.
- No. 3. Muzzle inclined forward and rifle too close to body.

36. Being at present or port arms: 1. *Order*, 2. *ARMS*. This movement is executed in two counts.

At the command *ARMS*, let go with the right hand, lower and carry the piece to the right with the left hand; regrasp it with the right hand just above the lower band, let go with the left hand and take the position shown here which is the next to the last position in coming to the order. The left hand should be above and near the right, steadying the rifle, fingers extended and joined, forearm and wrist straight and inclined downward. Barrel to the rear. All the fingers of the right hand grasp the gun. Butt about 3 inches from the ground. (It is only by a great deal of practice that this position can be quickly and correctly taken up.)



PLATE 19.—Next to Last Position
in Coming to Order Arms.

Being in the next to the last position in coming to order arms, at the command TWO, lower the rifle gently to the ground with the right hand, drop the left hand quickly by the side, and take the position of order arms.

The common errors are to slam the rifle down on the ground and to drop the left hand by the side in a slow and indifferent manner.



No. 1.

No. 2.

No. 3.

PLATE 20.

Incorrect Positions.

No. 1. Thumb is up. Rifle too far from the ground.

No. 2. Rifle too near the ground. Thumb is up. Butt of rifle too far to the right.

No. 3. Rifle held too high and too far away from body.

4 final don't. Don't look down as you come to the order.

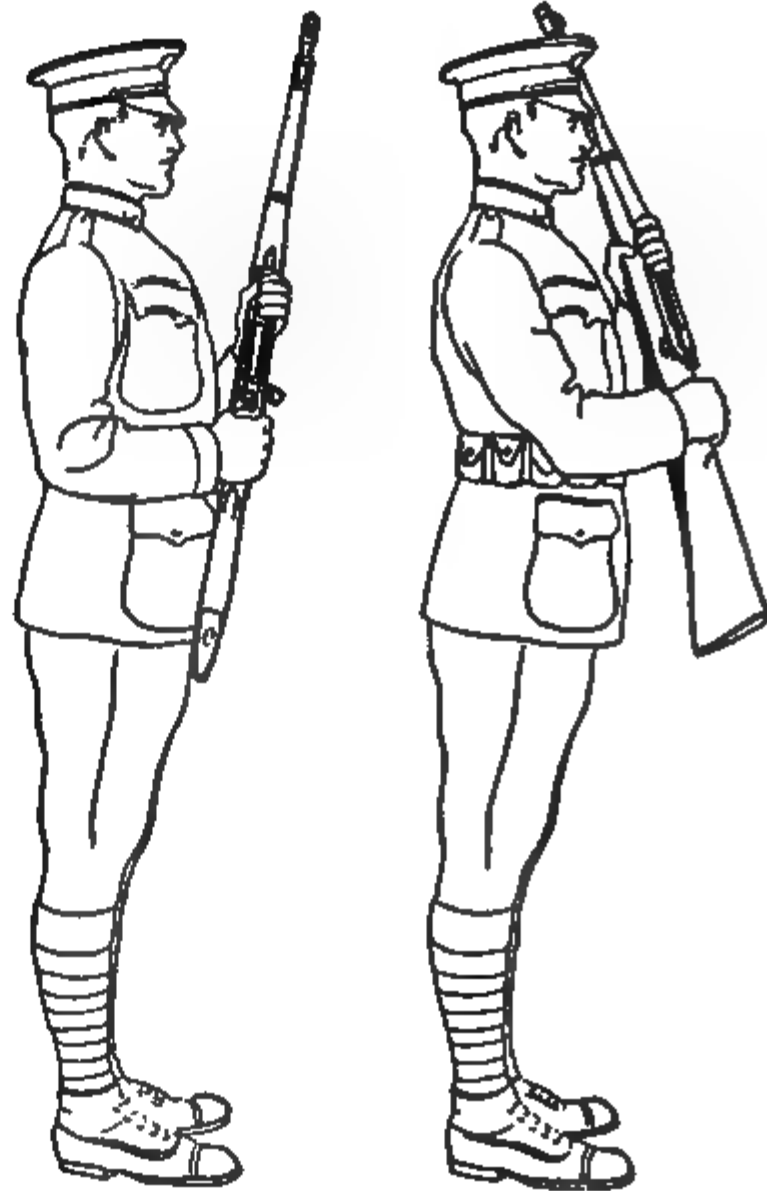
37. Being at order arms: 1. *Port*, 2. *ARMS*. This movement is executed in one count.

At the command *ARMS*, with the right hand raise and throw the rifle diagonally across the body, grasp it smartly with both hands; the right, palm down, at the small of the stock, the left, palm up, at the balance; barrel up, sloping to the left and crossing opposite the junction of the neck with the left shoulder; *right forearm horizontal*; left forearm resting against the body. The rifle is held in a vertical plane parallel to the front.



PLATE 21.
1. *Port*, 2. *ARMS*.

In executing this movement it is a common error with beginners to raise the piece as though it weighed much more than it does. No part of the body should move except the arms in coming to port arms from order arms. The rifle should literally be thrown to the correct position where it is caught by both hands at the same time. A well-drilled soldier should be able to do this with his eyes shut.



No. 1.

No. 2.

No. 3.

PLATE 22.

Incorrect Positions of Port Arms.

- No. 1. Arms held away from side and the rifle is sloping too far to the left.
 No. 2. Rifle held too low and too close to body.
 No. 3. Rifle held too high and not in a vertical plane parallel to the body.

38. Being at present arms: 1. *Port*, 2. ARMS. This movement is executed in one count.

Carry the piece diagonally across the body and take the position of port arms.

39. Being at port arms: 1. *Present*, 2. ARMS. This movement is executed in one count.

At the command ARMS carry the piece to a vertical position in front of the center of the body and take the position of present arms.



40. Being at order arms: 1. *Right shoulder*, 2. ARMS. This movement is executed in three counts.

At the command ARMS, with the right hand raise and throw the rifle to the position diagonally across the body; carry the right hand quickly to the butt, and at the same time grasp the heel between the first two fingers, as shown in the illustration. Note the position of the first two fingers of right hand.



PLATE 23.

1. *Right Shoulder*, 2. ARMS, at ARMS.

At the command TWO, without changing the grasp of the right hand, and without moving the head, place the rifle on the right shoulder, right elbow near the side, *the rifle in a vertical plane, perpendicular to the front*; carry the left hand, thumb and fingers extended and joined, to the small of the stock, wrist straight and elbow down. *Barrel up and inclined at an angle of about 45° from the horizontal. Trigger guard in the hollow of the shoulder, tip of forefinger touching the cocking piece.* The italic parts

of the above explanation emphasizes the three conditions to be fulfilled when the rifle is in the correct position on the shoulder. In executing count TWO, keep this rule in mind—shove the rifle to the right with the left hand and guide it to the correct position on the shoulder with the right hand. This requires a firm grasp of the butt of the rifle with the right hand.

Caution. Notice that the right forearm is not necessarily horizontal. The height of the man and the length of his arm determines the position of the right forearm.

PLATE 24.

1. *Right Shoulder*, 2. ARMS, at Count of TWO.

No. 1.

No. 2.
PLATE 25.
Common Errors.

No. 3.

In Plate 25 the following common errors, often committed at count TWO, are shown:

No. 1. Right arm not by side. Left arm too high. Remember that the left arm rests on the chest. This is very commonly confused with the rifle salute.

No. 2. Thumb is up. Butt of rifle carried to the right.

No. 3. Trigger guard not against shoulder. Butt held too low. Hand not straight.

At the command THREE, drop the left hand quickly by the side and don't dangle it.

PLATE 26.
1. *Right Shoulder*, 2. ARMS, at Count of THREE.

No. 1.

No. 2.

No. 3.

PLATE 27.
Incorrect Positions.

Plate 27 shows the following very common incorrect positions of right shoulder arms:

- No. 1. Right arm not by side. Butt of piece too high.
- No. 2. Heel of rifle too far to left and too low.
- No. 3. Trigger guard not against shoulder. Butt held too low.

41. Being at the right shoulder arms: 1. *Order*, 2. *ARMS*. This movement is executed in three counts.

At the command *ARMS*, press the butt down quickly and throw the rifle to the diagonal position across the body, the right hand retaining the grasp of the butt. A great deal of practice is required to execute this first movement correctly and without moving the head. The secret lies largely in controlling the rifle with the grasp of the right hand.



PLATE 28.
1. *Order*, 2. *ARMS*, at
ARMS.

PLATE 29.
1. *Order*, 2. *ARMS*, at
TWO.

At the command *TWO* let go with the right hand and lower the piece to the right with the left hand, as explained in paragraph 36.

At the command *THREE* come to the order arms.

The common errors committed in executing this movement are:

No. 1. To duck the head to the left when the rifle is removed from the shoulder.

No. 2. To throw the rifle too far to the front when it is brought down to the first position.

ARMS.

TWO.

THREE.

PLATE 30.

1. *Right Shoulder*, 2. ARMS.

42. Being at port arms the command is: 1. *Right shoulder*, 2. ARMS. This movement is executed in three counts. (Plate 30.)

At the command ARMS, change the right hand to the butt.

At the command TWO and THREE come to the right shoulder as from order arms.

It is a common error in executing this movement to start the second count before the first one is completed.

43. Being at right shoulder arms the command is: 1. *Port*, 2. ARMS. This movement is executed in two counts.

At the command ARMS, press the butt down quickly and throw the piece (with the right hand) to the diagonal position across the body, grasping it with the left hand at the balance; the right hand retaining its grasp of the butt as shown in the figure above the word ARMS. (Plate 31.)

At the command TWO change the right hand to the small of the stock.

44. Being at right shoulder arms the command is: 1. *Present*, 2. ARMS. This movement is executed in three counts.

At the command ARMS execute port arms. (This requires two counts.) At the command THREE execute present arms.

ARMS.

TWO.
PLATE 31.
 1. *Present*, 2. ARMS.

THREE.

45. Being at present arms the command is: 1. *Right shoulder*, 2. ARMS. The movement is executed in four counts.

At the command ARMS, execute port arms. At the command TWO, THREE, FOUR, execute right shoulder arms as from port arms as shown in Plate 30.

Cautions. 1. Make each movement distinct in itself. Do not slight any of them. There is always a tendency to combine the first and second counts.

2. At TWO let go of the small of the stock with the right hand and grasp the butt of the piece as in coming to the first position of the right shoulder from the order.

46. Being at port arms, the command is: 1. *Left shoulder*, 2. ARMS. The movement is executed in two counts.

At the command ARMS, let go of the rifle with the left hand and with the right hand still grasping the small of the stock place it (rifle) on the left shoulder, barrel up, trigger guard in the hollow of the shoulder; at the same time grasp the butt with the left hand, heel between the first and second fingers, thumb and fingers closed on the stock.

ARMS. TWO.

PLATE 32.

1. *Left Shoulder*, 2. ARMS.

At the command TWO, drop the right hand quickly to the right side as shown in Plate 32, No. 2.

Left shoulder arms may also be ordered directly from the order, right shoulder or present or the reverse. At the command ARMS, execute port arms and continue to the position ordered.

On long marches at attention, it lessens the fatigue of the men in ranks, if they are permitted to march at left shoulder arms part of the time.

In executing this first movement be careful not to commit any of the common errors shown in Plate 33:

No. 1. Right arm too high. Butt too high.

No. 2. Butt too close to center of the body. Not grasping rifle correctly with fingers of left hand.

No. 3. Right arm too high. Butt too high.

The incorrect positions of left shoulder arms are usually the same as in right shoulder arms as shown in Plate 27.

No. 1.

No. 2.
PLATE 33.
Common Errors.

No. 3.

47. Being at left shoulder arms, the command is: 1. *Port*, 2. ARMS. This movement is executed in two counts.

At the command ARMS grasp the piece smartly with the right hand at the small of the stock. (See figure on the left, Plate 32.)

At the command TWO let go with the left hand and at the same time carry the piece with the right hand to the position of port arms and then regrasp it with the left.

This is one of the prettiest movements in the manual of arms when executed properly. However there is often a tendency to run up the count.

48. Being at order arms, the command is: 1. *Parade*, 2. REST. The movement is executed in one count.

At the command REST, carry the muzzle in front of the center of the body, barrel to the left. (The rifle pivots on its heel.) Grasp the piece with the left hand just below the stacking swivel, and with the right hand below and against the left. Left knee slightly bent. Carry the right foot 6 inches straight to the rear.

49. Being at parade rest, the command is: 1. *Squad*, 2. ATTENTION. The movement is executed in one count.

At the last syllable of the word ATTENTION, resume the order, the left hand quitting the piece opposite the right hip. Upon resuming the position of attention don't move about in ranks as is often done, but snap into the new position and hold it.

The position of parade rest is used:

1. At retreat formation under arms while the field music sounds retreat.

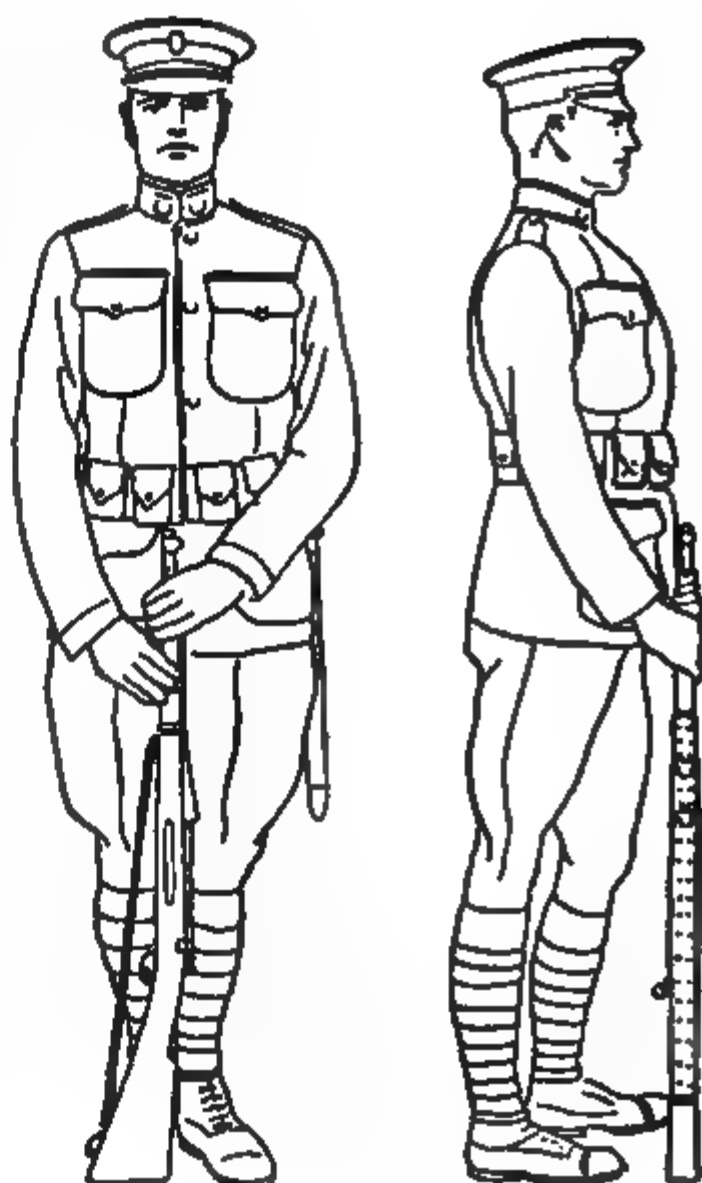


PLATE 34.
1. *Parade*, 2. REST.

2. At parades and guard mount while the band is trooping the line, i. e., marching up and down in front of the line.

3. At funeral ceremonies at the grave of the deceased.

50. Being at order arms, the command is: 1. *Trail*, 2. ARMS. This movement is not done by the numbers.

At the command ARMS raise the piece, right arm slightly bent and incline the muzzle forward so that the barrel makes an angle of about 30° with the vertical.

When it can be done without danger or inconvenience to others, as when deployed in line of skirmishers, the piece may be grasped at the balance and the muzzle lowered until the piece is horizontal; a similar position in the left hand may be used.

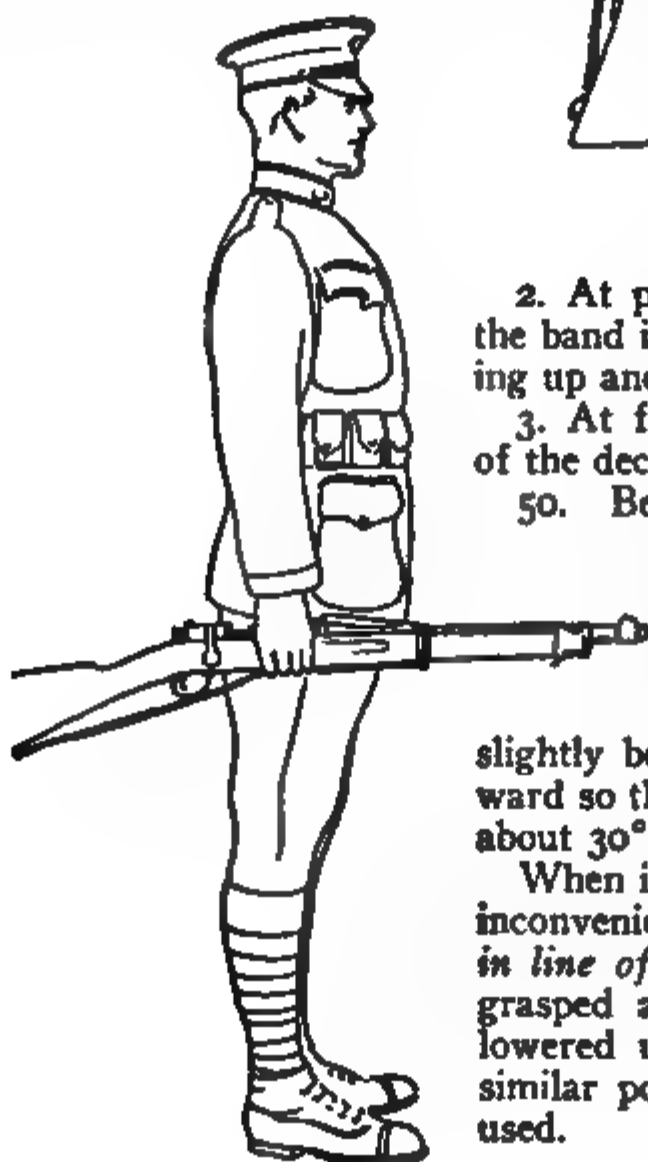


PLATE 35.
1. *Trail*, 2. ARMS.

n of trail arms is used

ndividuals move in a
1 to rectify their posi-
ings).

inks are opened.

ntervals and distances.

d left step.

ded order formation.

at trail arms, the com-

1. *Order*, 2. *ARMS*.

nt is not done by the

piece with the right
me the order.

at right shoulder
mmand is: 1. *Rifle*,

This movement is
70 counts.

NO. 2. LEFT ELBOW TOO HIGH.
Fingers not extended and
joined.

No. 1.

No. 2.

PLATE 37.
Common Errors.

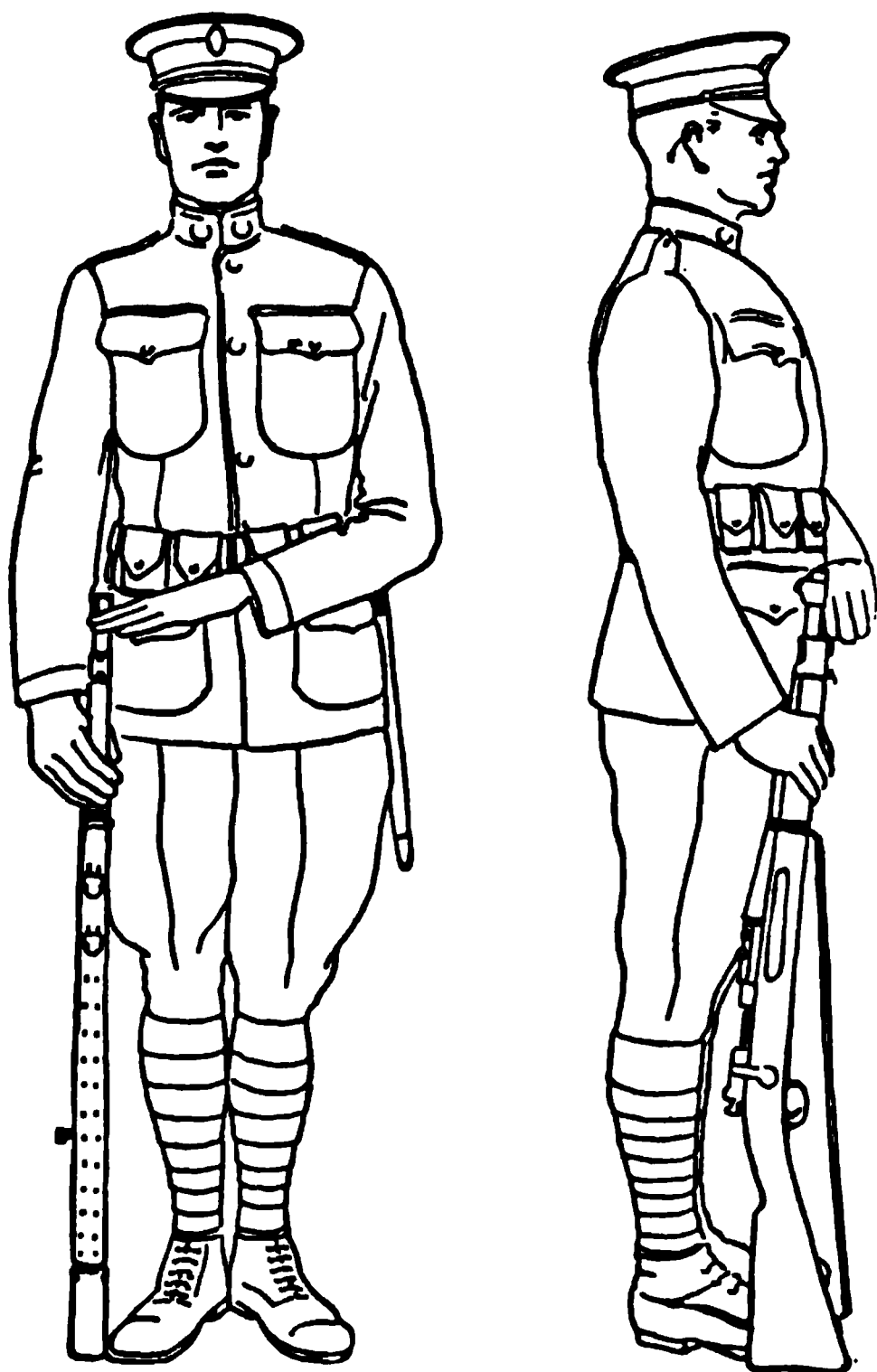


PLATE 38.
1. Rifle, 2. SALUTE.

Saluting. The military salute is universal. It is an old custom. It is merely a courteous recognition between two individuals in the same honorable profession. It does not imply servitude, or inferiority, as some Americans seem to think. Regulations require that it be rendered by both the senior and the junior, as bare courtesy requires between gentlemen in civil life. It is the military equivalent of your father's expression, "Good morning," or "How do you do?" Therefore be careful about saluting. Be proud of the manner in which you execute your salute and make it indicative of discipline, politeness, good breeding and self-respect. The junior salutes first. Saluting distance is that within which recognition is easy.

53. Being at order or trail arms, the command is: 1, *Rifle*, 2. SALUTE.

At the command SALUTE carry the left hand smartly to the right side, palm of hand down, thumb and fingers extended and joined, forefinger against piece near the muzzle; look towards the person saluted. At the command TWO, drop the left hand by the side; turn the head and eyes to the front.

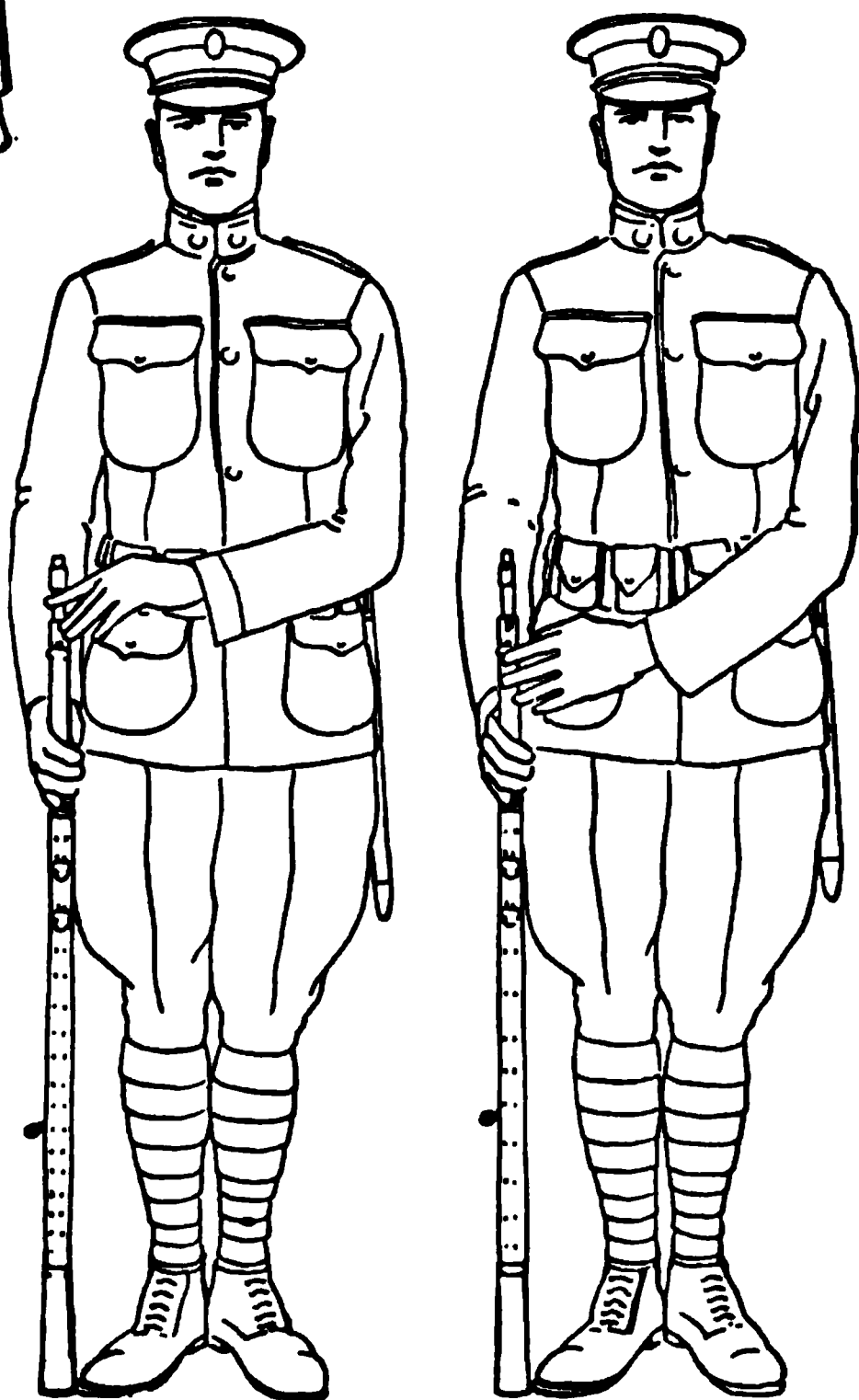
Caution. Note the sequence in which this movement is described.

Don't commit any of the common errors shown in Plate 39.

No. 1. Fingers not extended and joined.

No. 2. Fingers not joined, palm of hand should be down.

54. *Salutes, when used:* As you now know how to render all the prescribed salutes, you should know why and when military people salute.



No. 1.

No. 2.

PLATE 39.
Common Errors.

Observe the following general rules:

1. Salute all officers of the Army, Navy, Marine Corps, and of the Militia and Officers Reserve Corps in uniform. Do not salute non-commissioned officers.

2. Do not salute while seated.

3. Look at the person you are saluting.

4. Never salute while the left hand is in the pocket or with a cigarette, cigar or pipe in the mouth.

5. Never salute with the left hand.

6. Never salute an officer while you are in ranks. In ranks you merely obey commands.

7. Indoors (in your tent or barracks) unarmed, do not salute, but stand at attention, uncovered upon the entrance of an officer. If he speaks to you, then salute.

8. Indoors, armed, render the prescribed salute, *i. e.*, the rifle salute at order arms or at trail.

9. Outdoors, armed, render the prescribed salute, *i. e.*, the rifle salute at right shoulder arms.

10. Outdoors, unarmed, or armed with side-arms, salute with the right hand.

11. Salute when the officer is six paces away from you, and when the salute has been acknowledged, or the officer has passed, lower the hand quickly to the side.

55. Being at order arms, the command is: 1. *Fix*, 2. BAYONET. This movement is not executed by the numbers.

If the bayonet scabbard is carried on the belt; execute parade rest; grasp the bayonet with the right hand, back of hand toward the body, draw the bayonet from the scabbard and fix it on the barrel, glancing at the muzzle; resume the order.

If the bayonet is carried on the haversack; draw the bayonet with the left hand in the most convenient manner and fix it on the rifle.

56. Being at order arms, the command is: 1. *Unfix*, 2. BAYONET. This movement is not executed by the numbers.

If the bayonet scabbard is on the belt; execute parade rest; grasp the handle of the bayonet firmly with the right hand, pressing the spring with the forefinger of the hand; raise the bayonet until the handle is about 12 inches above the muzzle of the piece; drop the point to the left, back of hand toward the body, and glancing at the scabbard, return the bayonet, the blade passing between the left arm and the body; regrasp the piece with the right hand and resume the order.

If the bayonet scabbard is carried on the haversack; take the bayonet from the rifle with the left hand and return it to the scabbard in the most convenient manner.

If marching or lying down, the bayonet is fixed or unfixed in the most expeditious and convenient manner and the piece returned to the original position.

Fix and unfix bayonet are executed with promptness and regularity but not in cadence.

CHARGE BAYONET. Whether executed at a halt or in motion, the bayonet is held toward the opponent as in the position of guard.

57. Being at order arms, the command is: 1. *Inspection*, 2. ARMS.

At the command ARMS, take the position of port arms; seize the bolt handle with the thumb and forefinger of the right hand, turn the handle up, draw the bolt back, and then and not before, glance at the chamber. Having found the chamber empty, or having emptied it, raise the head and eyes to the front. Keep your right hand on the bolt. (See Plate 40.)

Caution. Note the sequence in which this movement is described.

It is a very common error to change the position of the piece while drawing the bolt back. Guard against this.

ARMS.	Open Bolt.	Look Down.	Look Up.
	PLATE 40.		
	1. <i>Inspection</i> , 2. ARMS.		

58. Being at inspection arms, the command is: 1. *Order (right shoulder or port)*, 2. ARMS.

At the preparatory command (*i. e.*, at the command ORDER), push the bolt forward, turn the handle down, pull the trigger, and resume port arms. At the command ARMS, complete the movement ordered. Don't hurry this movement.

59. Being at a halt, to dismiss the squad, the commands are: 1. *Inspection*, 2. ARMS, 3. *Port*, 4. ARMS, 5. DISMISSED.

These commands are often given so rapidly that the men in ranks do not have sufficient time to obey them properly and the disciplinary effect of an otherwise satisfactory drill is lost in an unmilitary dismissal of the men.

SCHOOL OF THE SQUAD.

60. Squad drill is the basis of the platoon and company drill. In fact it is the very A, B, C's of all drill. A thorough mastery of the squad drill is essential if the platoon drill is to be perfect. In the School of the Soldier the student had to learn what one man did, whereas in the School of the Squad he must learn what eight do, which requires careful study.

61. Before taking up the organization and drill of a squad, the student must become familiar with the definitions of the following words that are frequently used:

Alignment: A straight line upon which several elements are formed, or are to be formed; or the dressing of several elements upon a straight line. The squad is aligned when it is dressed.

Depth: The space from head to rear of any formation or of a position, including the leading and rear elements. The depth of a man is assumed to be 12 inches. (See Plate 41.)

Distance: Space between elements in the direction of depth. It is measured from the back of the man in the front to the breast of the man in the rear. The rear rank, when in line or column, is 40 inches from the front rank. (See Plate 41.) You will learn later the proper distance between platoons.

Element: A file, squad, platoon, company, or larger body, forming part of a still larger body.

File: Two men, the front-rank man and the corresponding man of the rear rank. The front-rank man is the file leader. A file which has no rear-rank man is a "blank file." The term file applies also to a single man in a single rank formation. However, a single rank formation is seldom or never used.

Formation: Arrangement of the elements of a command. The placing of all fractions in their order in line, in column, or for battle. The formations you are about to learn pertain to a squad.

Interval: Space between elements of the same line. The interval between men in ranks is 4 inches and is measured from elbow to elbow. It is to get this interval that each man is required to raise his arm when the company is formed. The interval between platoons in line you will learn later.

Order, close: The formation in which the units, in double rank are arranged in line or in column with normal intervals and distances.

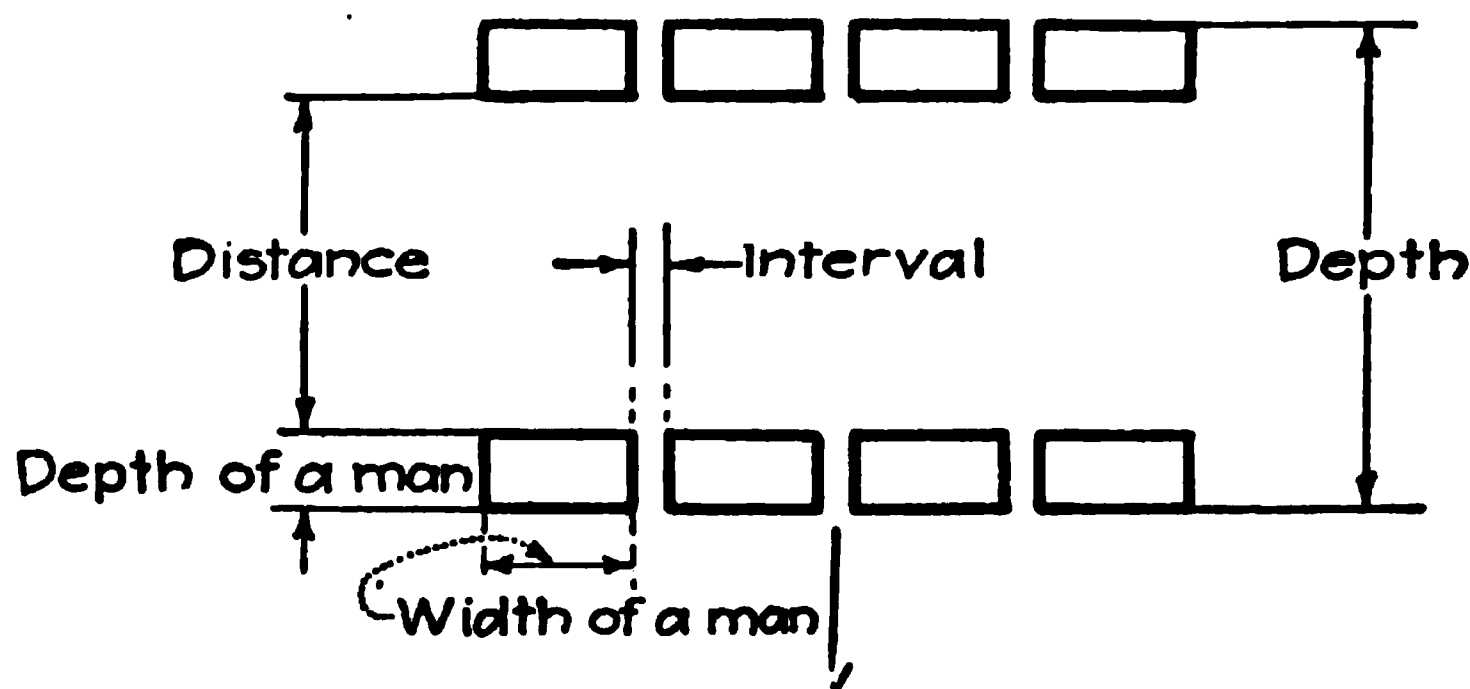


PLATE 41.—Depth, Distance and Interval.

Order, extended: The formation in which the units are separated by intervals greater than that in close order. The extended order formation is the one used in battle.

Pace: Thirty inches, the length of the full step in quick time. The pace at double time is 36 inches.

Rank: A line of men placed side by side. There are two ranks; the front and rear rank.

Unit: An individual or file or larger military organization forming part of a still larger organization. Examples: Individual file, squad, section, platoon, company, regiment, etc.

62. Soldiers are grouped into squads for four reasons, namely:

1. So they can be instructed.
2. So they can be controlled.
3. So that order can be maintained.
4. So that discipline can be secured.

The last reason, to obtain discipline, may need some explanation. A soldier is said to be disciplined when he at all times willingly obeys the orders of his superiors or in case of their absence the orders he thinks they (superiors) would give were they present. Discipline is the habit of obedience.

63. Close order drill is given primarily to get you in the habit of obeying commands or to make you a disciplined soldier. Remember this point and then put your heart and soul into your drill.

64. The squad proper consists of a corporal and seven privates.

The movements in the school of the squad are designed to make the squad a fixed unit and to facilitate the control and movement of the platoon and company. If the number of men grouped is more than 3 and less than 12, they are formed as a squad of four files, the excess above 8 being posted as file closers. If the number grouped is greater than 11, two or more squads are formed, and the group is termed a section or platoon. For the instruction of recruits these rules may be modified.

65. The corporal is the squad leader, and when absent is replaced by a designated first-class private. If no designation is made, the senior first-class private acts as leader.

The corporal when in ranks, is posted as the left man in the front rank of the squad.

When the corporal leaves the ranks to lead his squad his rear-rank man steps into the front rank and the file remains blank (No. 3 rear rank does not move over), until the corporal returns to his place in ranks, when the rear-rank man steps back into the rear rank. This paragraph does not apply when the corporal leaves his place in ranks to act as an instructor.

66. In battle every effort should be made to keep the squad together. When the squads become disorganized, control is lost and confusion results. In battle every man must stick to his squad leader, and if separated from his squad attach himself to another squad. Team work is essential to success.

67. The squad executes the *halt*, *rests*, *facings*, *steps* and *marchings* and the *manual of arms* as explained in the School of the Soldier.

Organization of the Squad.¹

68. The squad consists of 1 corporal, 6 riflemen and 1 auto-rifleman. One rifleman is equipped with a grenade discharger. One rifleman carries extra ammunition for the automatic rifle and serves as replacement for the auto-rifleman. All riflemen carry a certain supply of extra ammunition for the automatic rifle and, when necessary, rifle and hand grenades.

The general training of the members of the squad will be uniform. All men will be trained in the use of the rifle and automatic rifle. Training in the use of grenades will be supplementary to training with the rifle and automatic rifle.

To Form the Squad.

69. To form the squad the instructor places himself three paces in front of where the center of the squad is to be and commands: FALL IN.

At the command FALL IN the men assemble at attention, pieces at the order and are arranged by the corporal in double rank, as nearly as practicable in order

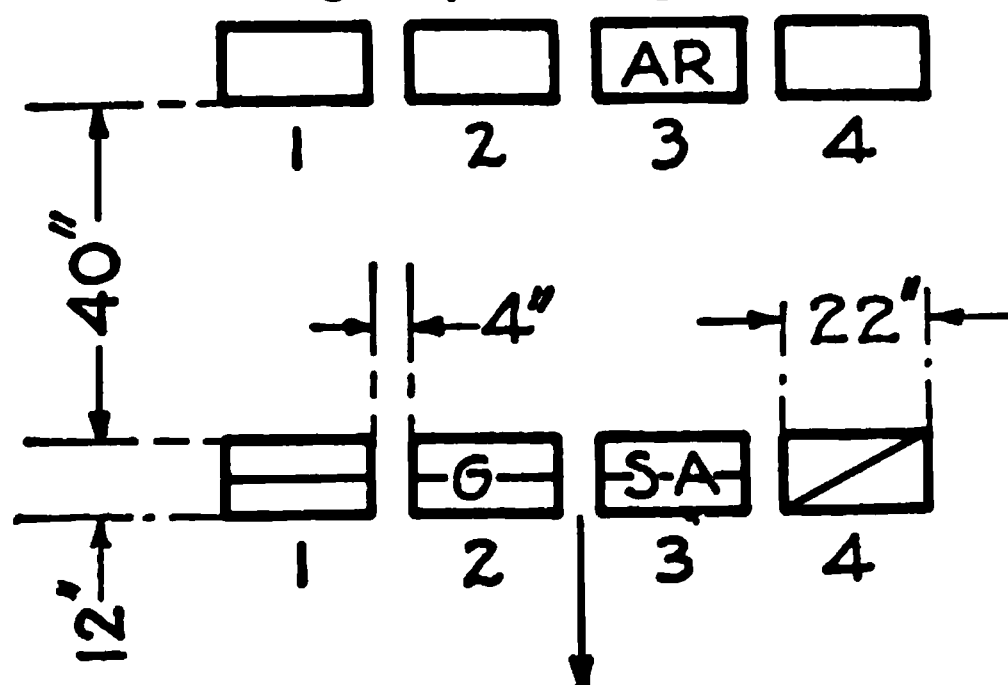
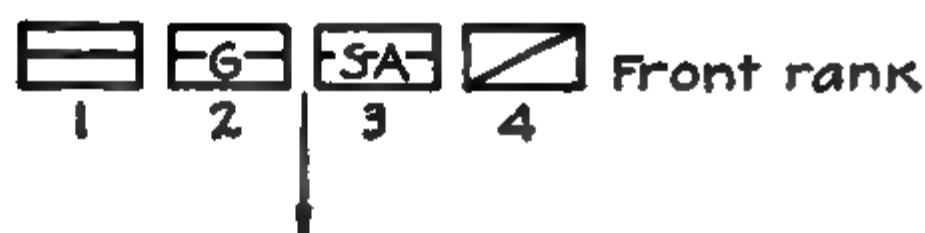


PLATE 42.—Formation of the Squad.

of height from right to left. When the men take their places in the formation of the squad each man places the palm of his left hand on his hip, fingers pointing downward. Each man drops his left hand as soon as the man on the left has his interval. This insures uniformity of interval between files. It gives each man 4 inches which is sufficient space to permit the execution of the manual of arms. The rear rank forms with a distance of 40 inches. The men on the left of the squad (left file) do not bring up their arms unless the squad is part of a larger unit.

¹ The student should be shown an automatic rifle, grenade discharger and hand grenade and the purpose of each should be explained so that he may understand the following paragraph which will mean little to him otherwise.

PLATE 43.—The Squad in Line.



LEGEND







-  Corporal
-  Front rank man (Rifleman)
-  Rear rank man (Rifleman)
-  Auto-rifleman
-  Substitute auto-rifleman and carrier
-  Rifleman with grenade discharger

PLATE 44.—Organization of the Squad.

The instructor then commands: **COUNT OFF.**

At this command, all except the right file execute *eyes RIGHT* and beginning on the right, the men in *each rank* count *one, two, three, four*; each man turns his head and eyes to the front as he counts.

Pieces are then inspected as has been previously explained.

70. As soon as its organization has been permanently fixed, the squad forms as follows: No. 1 front and rear rank; No. 2 rear rank, No. 4 rear rank, rifleman; No. 2 front rank, rifleman with grenade discharger; No. 3 rear rank, auto-rifleman; No. 3 front rank, substitute auto-rifleman and carrier; No. 4 front rank, corporal. Weapons are assigned in accordance with their probable use in battle when the squad is deployed.

Alignments.

71. To align the squad, the base file or files having been established, the command is: 1. *Right (left)*, 2. **DRESS**, 3. **FRONT**.

At the command **DRESS**, all men place the left hand upon the hip (whether dressing to the right or left); each man, except the base file, when on or near the

PLATE 45.—1. *Right*, 2. **DRESS**.

new line executes *eyes RIGHT*, and, taking steps of 2 or 3 inches, places himself so that his right arm rests lightly against the elbow of the man on his right (vice versa in left dressing), and so that his eyes and shoulders are in line with those of the men on his right, and so that each man can see the eyes of at least two men on his right.

The instructor verifies the alignment of both ranks from the right flank and orders up or back such men as may be in the rear or in advance of the line; only the men designated move.

At the command **FRONT**, given when the ranks are aligned, each man turns his head and eyes to the front and drops his left hand quickly by his side.

There are in dressing a number of common errors that we should try to avoid. Don't jab the man on your left with your elbow. If you are not on line, move your feet. Don't lean forward or backward. Be sure to touch gently the man on your right with your right arm. Be certain to keep your left elbow forced well to the front. This is a little uncomfortable at first but unless we do this our arms will not measure the four inches correctly. Don't hump up the left shoulder, and don't turn the shoulders to the right. Keep fingers of left hand extended and joined.

A final caution. The heel of the hand should be on the hip bone; not below or above it; fingers are extended, joined and pointing straight down.

72. To preserve the alignment when marching, the command is: **GUIDE RIGHT (LEFT).**

The men preserve their intervals from the side of the guide, yielding to pressure from that side and resisting pressure from the opposite direction. They recover intervals if lost, by gradually opening out or closing in; they recover alignment by slightly lengthening or shortening the steps. The rear-rank men cover their file leaders at 40 inches.

In double rank, the front-rank man on the right, or designated flank conducts the march. When marching faced to the flank, the leading man of the front rank is the guide. When the guide is not announced and the squad is in line (close order) the guide is to the right. The guide is charged with the step and direction. He must keep an even step of 30 inches at the rate of 128 (when marching at quick time) a minute and march in a straight line if the squad is to maintain a good alignment.

The Oblique March.¹

73. For the instruction of recruits, the squad being in line, the instructor first causes the squad to face half right (or half left), points out to the men their relative positions, and explains that these are to be maintained in the oblique march. He then causes the squad to face to the original front. (See Plate 46.)

Being at a halt or marching, to move in an oblique direction, the command is: 1. *Right (left) oblique*, 2. **MARCH.**

Each man steps off in a direction 45° to the right of his original front. He preserves his relative position, keeping his shoulders parallel to those of the guide (the man on the right front of the line or column), and so regulates his steps that the ranks remain parallel to their original front.

The squad may be halted while executing an oblique march by the command:

1. *Squad*, 2. **HALT.**

At the command **HALT**, the men halt *faced* to the front.

¹ Many drill-masters do not realize the importance of perfecting their men in the execution of this movement which is the key to the most important movement of all movements, namely "Squads right."

PLATE 46.—1. *Right Half*, 2. **FACE.**

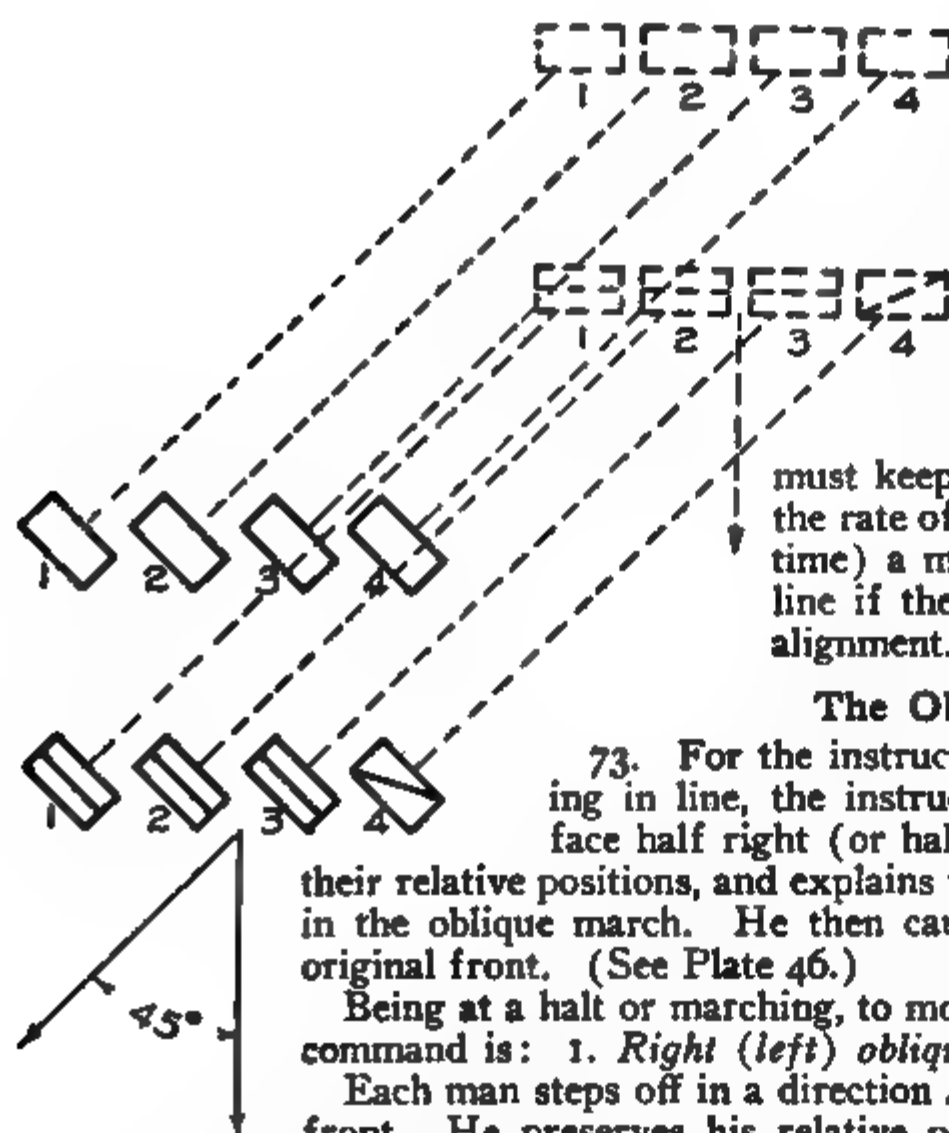


PLATE 47.

1. *Right Oblique*,
2. **MARCH.**

If executing right oblique the command HALT should be given as the left foot hits the ground because the right foot when advanced will be positioned to make it easy to halt faced to the front. For the same reason the command HALT should be given on the right foot when executing left oblique.

To resume the original direction, the command is: 1. *Forward*, 2. MARCH.

The men half face to the left in marching and then move straight to the front. If at half step or mark time while obliquing, the oblique march is resumed by the commands: 1. *Oblique*, 2. MARCH.

74. The next three movements are most important. They are the basis of all drills. A thorough mastery of them is essential, otherwise the rest of the Infantry Drill Regulations will be very difficult.

FIRST MOVEMENT.

Squad Right.

75. Being in line, to turn on a fixed pivot, the command is: 1. *Squad right (left)*, 2. MARCH.

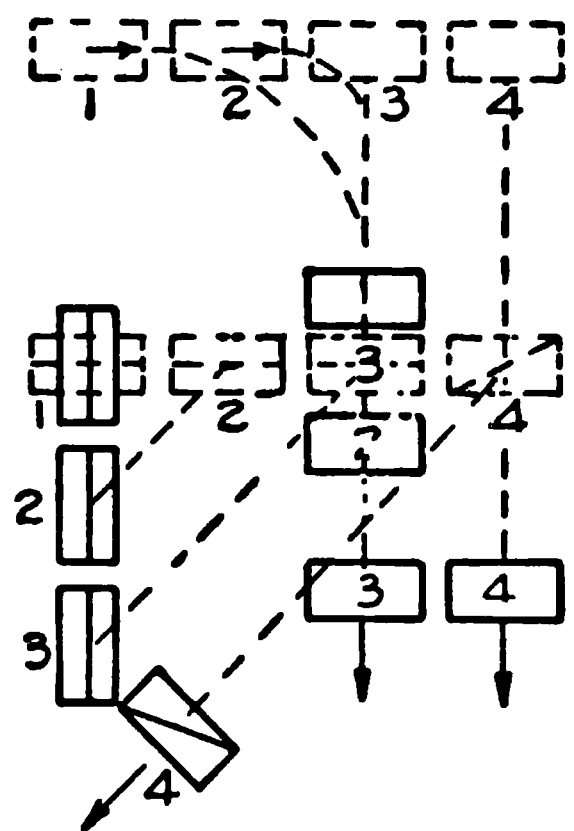
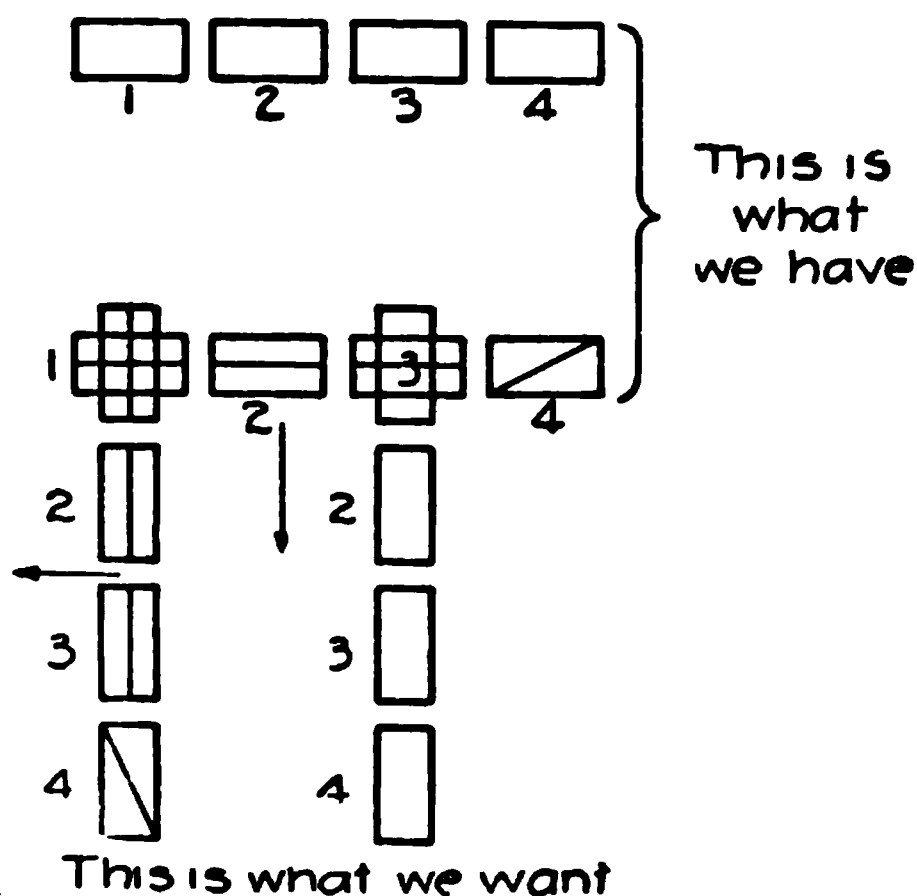


PLATE 48.—1. *Squad Right*, 2. MARCH.

Front rank. At the command MARCH, No. 1 front rank faces to the right in marching and marks time, glancing to the left; Nos. 2, 3 and 4 of the front rank turn 45° to the right in marching (executing right oblique), and place themselves abreast (on the same line) with No. 1 and mark time.

Rear rank. Now it is difficult to understand quickly the movements of the rear rank. Give them a lot of study and don't go on until you are certain that they are understood. The third man from the pivot is the key man of the rear rank.

No. 3 is the key man in the rear rank or the 3rd man from the pivot when the movement is squad right. He moves straight to the front. No. 2 follows No. 3. No. 1 follows No. 2.

When they (Nos. 1, 2 and 3) arrive in rear of their file leaders (Nos. 1, 2 and 3, front rank) they face to the right in marching and mark time, glancing to the left (marching flank). Notice that they do not close up on their front rank files.

No. 4 of the rear rank moves straight to the front four paces, and places himself abreast of No. 3, rear rank.

When No. 4 front rank and No. 4 rear rank are on the line (and the remainder of the squad *must glance toward them* to see when this is true), the whole squad

moves forward without command, dressing to the right unless GUIDE LEFT is announced.

NOTE.—We have said that No. 1 front rank marks time. We thus see that he becomes temporarily an immovable pivot for his squad. We therefore call him a fixed pivot in describing this movement.

Had the command been squad left instead of squad right, No. 4 would have been the fixed pivot instead of No. 1, and No. 2 of the rear rank would have moved to the front followed by Nos. 3 and 4 rear rank and executed the movement to the left as described above for Nos. 3, 2 and 1 rear rank.

Caution. In executing squad right, it is a good plan to have Nos. 1 and 2 rear rank glance at No. 3 rear rank and face to the right when he faces to the right or when he is in rear of No. 3 front rank. This requires them to do nothing but follow No. 3 in file, which is their big job.

In actually executing the movement Nos. 1 and 2 rear rank do not execute a left face and a column right, but initiate a "left oblique" into column of file behind No. 3.

In executing squad right it is best to give the command MARCH as the right foot strikes the ground and on the left foot in squad left. This rule makes the movement easy for the pivot man of the front rank.

Being in line to turn and halt, the command is: 1. *Squad right (left)*, 2. MARCH, 3. *Squad*, 4. HALT.

The turn is executed as prescribed in the preceding case except that all men on arriving on the new line, mark time until the command HALT is given, when they halt.

Whenever the third command (*i. e.*, squad) is given, it means that the command HALT is to follow. This is a caution to the squad to prepare to halt, consequently the command *Squad* should follow the command MARCH immediately. The command HALT should be given as No. 4 arrives on the line. It is a common error on the part of inexperienced instructors to permit their men to mark time too long with the result that the cadence is increased, the men get out of step and the halt is ragged.

SECOND MOVEMENT.

Squad Right About.

76. Being in line to turn about and march, the command is: 1. *Squad right (left) about*, 2. MARCH.

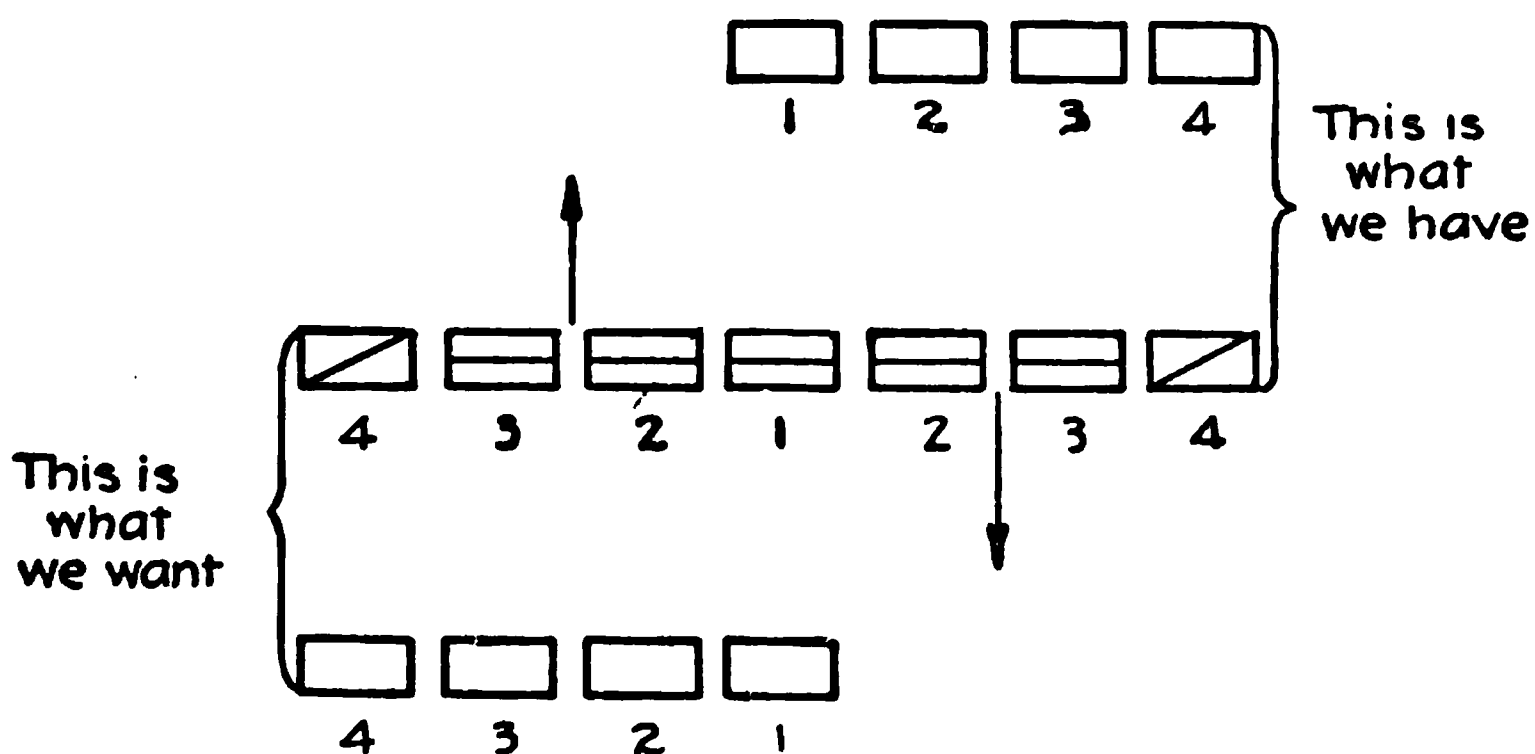


PLATE 49.—1. *Squad Right About*, 2. MARCH.

At the command MARCH, the front rank twice executes squad right, initiating (starting) the second squad right when No. 4 has arrived on the line. That much is very simple.

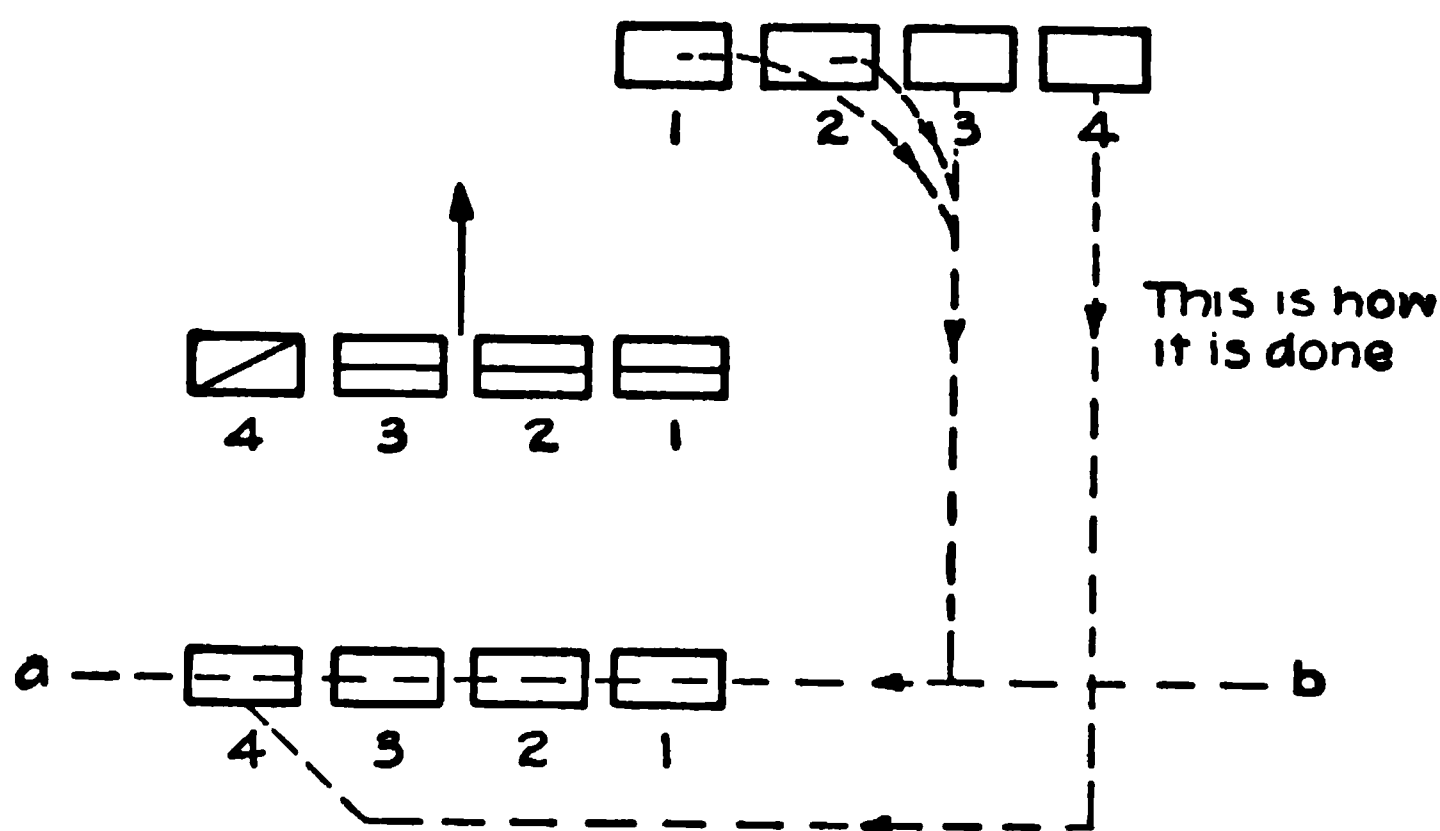


PLATE 50.—Movement of the Rear Rank.

The rear rank has a harder task. Let us have the front and rear ranks execute the movement separately.

The rear rank is to take its place on the dotted line *a-b*.

No. 3 rear rank (the 3rd man from the pivot) moves straight to the front until in prolongation of the line to be occupied by the rear rank.

No. 2 follows No. 3 and No. 1 follows No. 2.

When No. 3 arrives on the line to be occupied by the rear rank he changes direction to the right, followed by Nos. 2 and 1; he moves in the new direction until in rear of No. 3 front rank. When Nos. 3, 2 and 1, rear rank are in rear of Nos. 3, 2 and 1 front rank (*i. e.*, when they are in rear of their front rank men), they face to the right in marching and mark time. No. 4 marches on the left of No. 3 to his new position. As he arrives on the line, both ranks execute forward march without command. For the remainder of the squad to know when No. 4 front and rear rank have arrived on the line, they glance to the left (marching flank) to see.

In executing squad left about, No. 2 rear rank, being the 3rd man from the pivot, is the key man of the rear rank and is followed to his new position by Nos. 3 and 4 rear rank.

Caution. When causing squad right about to be executed from a march, it is a good plan to give your command of execution, MARCH, on the right foot and on the left foot for squad left about.

Being in line to turn about and halt: 1. *Squad right (left) about*, 2. MARCH, 3. *Squad*, 4. HALT.

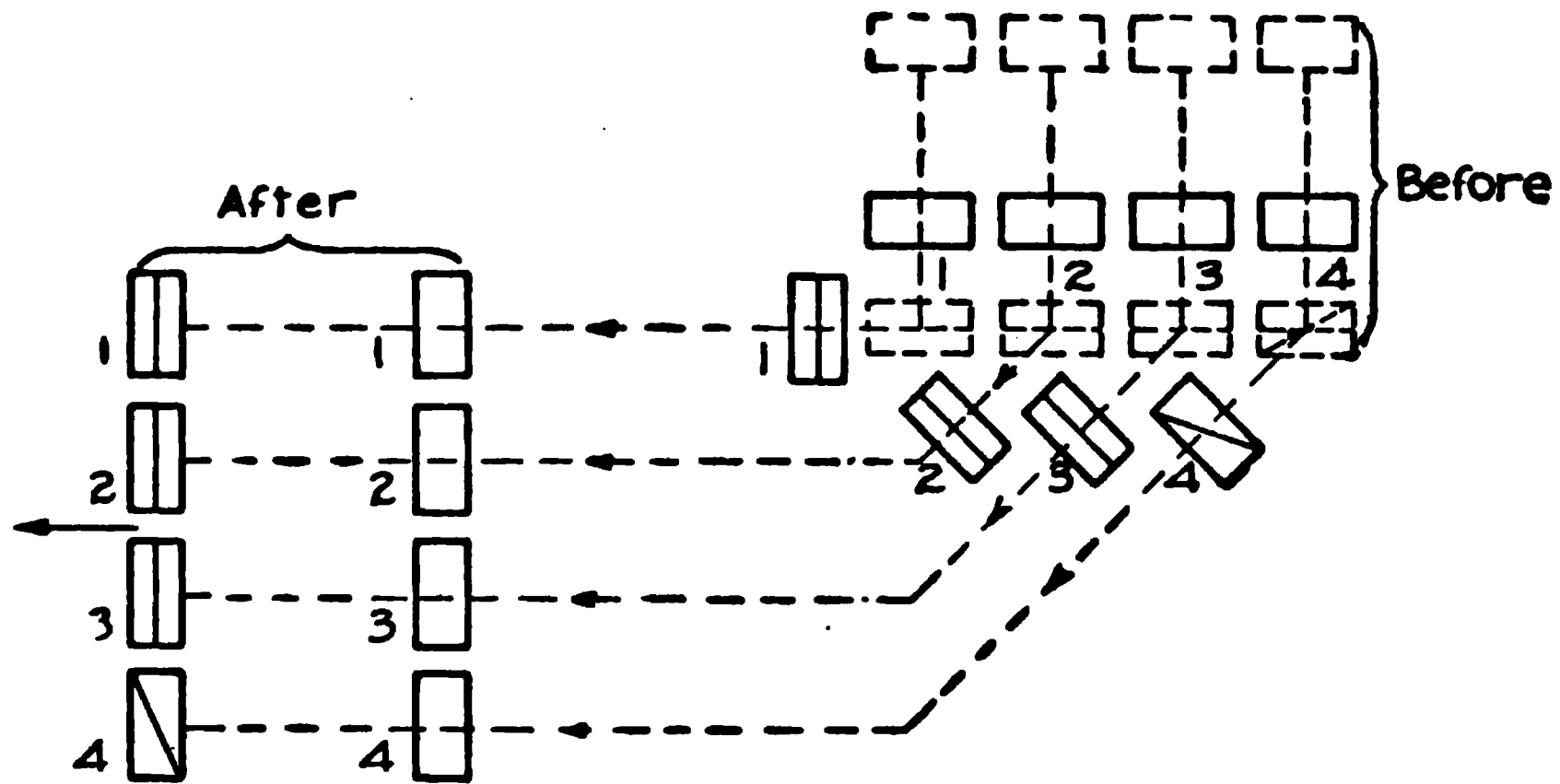
The third command (*squad*) is given immediately after the second. The turn is executed as prescribed in the preceding paragraph except that all men on arriving on the new line do not look to the marching flank but mark time until the fourth command is given when all halt. The fourth command (HALT) should be given as the last man arrives on the line.

In executing these movements it is a common error for the pivot and the two men next to him in the front rank to execute the second squad right without waiting for the man on the marching flank to get on the line.

THIRD MOVEMENT.

Right Turn.

77. Being in line to turn to the right (left) on a moving pivot, the command is:
1. *Right (left) turn*, 2. MARCH.



This is how it is done

PLATE 51.—1. *Right Turn*, 2. MARCH.

At the command MARCH No. 1 front rank faces to the right in marching and takes the half step. It is a common error for the pivot man to take half steps of more than 15 inches and to take up the full step too soon with the result that the men on the marching flank must increase the length of the stride or double time to get into position. Nos. 2, 3 and 4, front rank execute right oblique (turn 45° to the right) until opposite their places in line, then execute a second right oblique and on arriving abreast of the pivot man take up a half step and glance to the left or marching flank. When No. 4 arrives on the line, Nos. 1, 2, 3 and 4 take the full step without further command. (To know when No. 4 arrives on the line it is necessary to glance in his direction.)

The rear rank executes the movement in the same way and turns on the same ground as the front rank. The rear rank, therefore, moves forward at the command MARCH, or continues to move forward if already marching, until it arrives at the place where the front rank turned (one pace and 10 inches) when it executes the movement as just described for the front rank.

Note that the squad turns on No. 1 front rank but that he does not remain in his position even temporarily, as in squad right. He is therefore called the moving pivot. No. 4 is called the marching flank.

Had the command been left turn No. 4 would have been the moving pivot, No. 1 the marching flank and the oblique would have been to the left.

Caution. It is best to give the command MARCH on the right foot when executing "right turn" and on the left foot when executing "left turn." This permits the pivot man to execute "By the right (left) flank" correctly and therefore quickly clear the pivot for the rear rank.

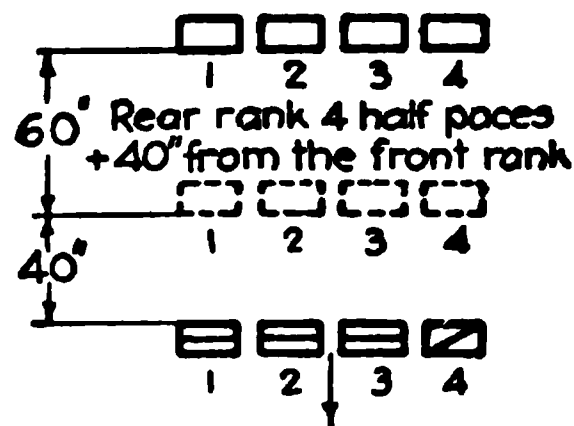
78. It is necessary for the student to know the meaning of the term file closers before going to the next movement.

File closers: Such officers and non-commissioned officers of a company as are posted in rear of the line. For convenience, all men posted in the line of the file closers are called file closers.

79. Being in line at a halt, to take interval the command is: 1. *Take interval*, 2. *To the right (left)*, 3. MARCH, 4. *Squad*, 5. HALT.



The squad being in line at a halt. To take interval to the right. Command: 1. *Take interval*, 2. *To the right*, 3. MARCH, 4. *Squad*, 5. HALT.



1. *Take interval*,
2. *To the right*.

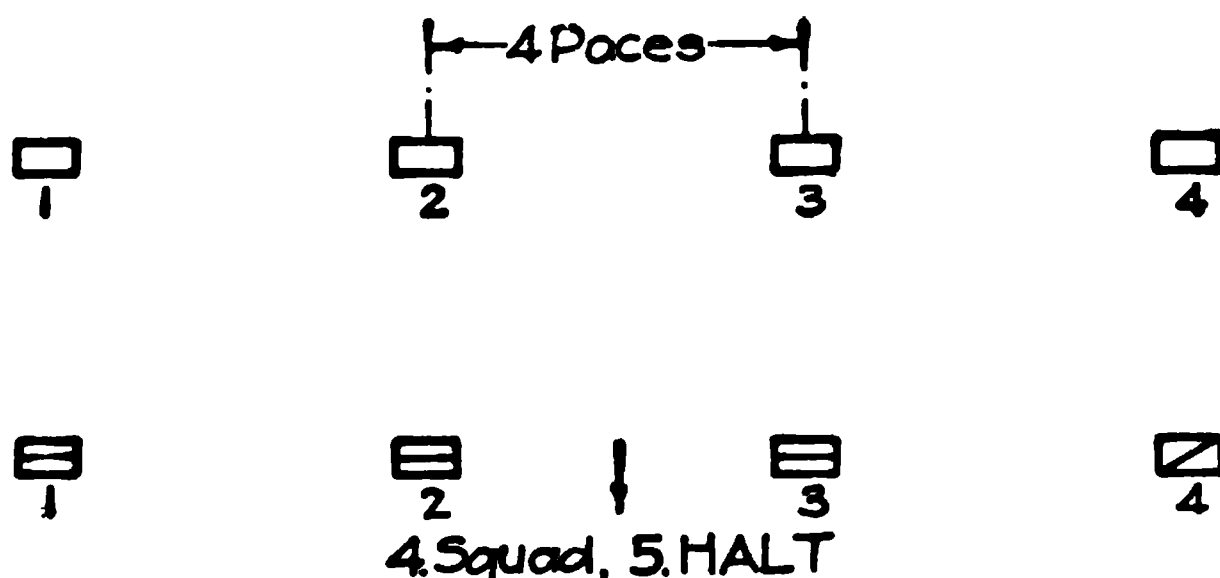
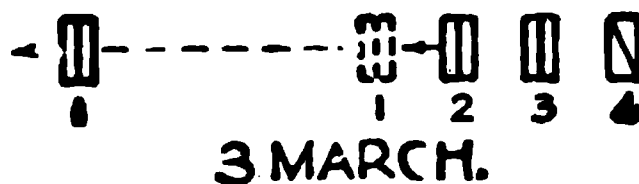
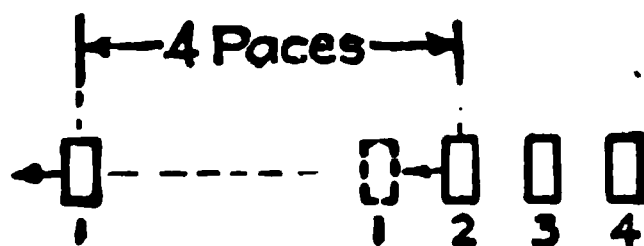


PLATE 52.—1. *Take Interval*, 2. *To the Right*, 3. MARCH, 4. *Squad*, 5. HALT.

At the second command "*to the right (left)*," the rear rank men march backward four steps (15 inches to each step) and halt. The file closers march backward until they have a distance of four paces from the rear rank. They actually take eight backward steps. Note that the actual distance from the front rank to the rear rank is now $40 + (4 \times 15)$ inches, *i. e.*, 100 inches.

At the command MARCH, all (front and rear rank and file closers) face to the right and No. 1 front and rear rank step off. Each file closer steps off with the file nearest him, No. 2 front and rear rank follow No. 1 front and rear rank respectively at a distance of four paces. Likewise with the other numbers. If there is a blank file on the right of a rear-rank man, he steps off at the same time that his front rank file steps off.

At the command HALT, given when No. 3 is three paces distant from No. 4, all halt and face to the front.

If under arms, this entire movement is executed at trail.

80. Being at intervals, to assemble, the command is: 1. *Assemble to the right (left)*, 2. MARCH.

At the command MARCH, No. 1 front rank stands fast, No. 1 rear rank closes in to 40 inches. The other men face to the right, close in by the shortest line, and face to the front. Each man upon arriving on the line, brings up his left arm as in forming the squad.

Being at intervals to assemble to the right
1 Assemble to the right. 2 MARCH

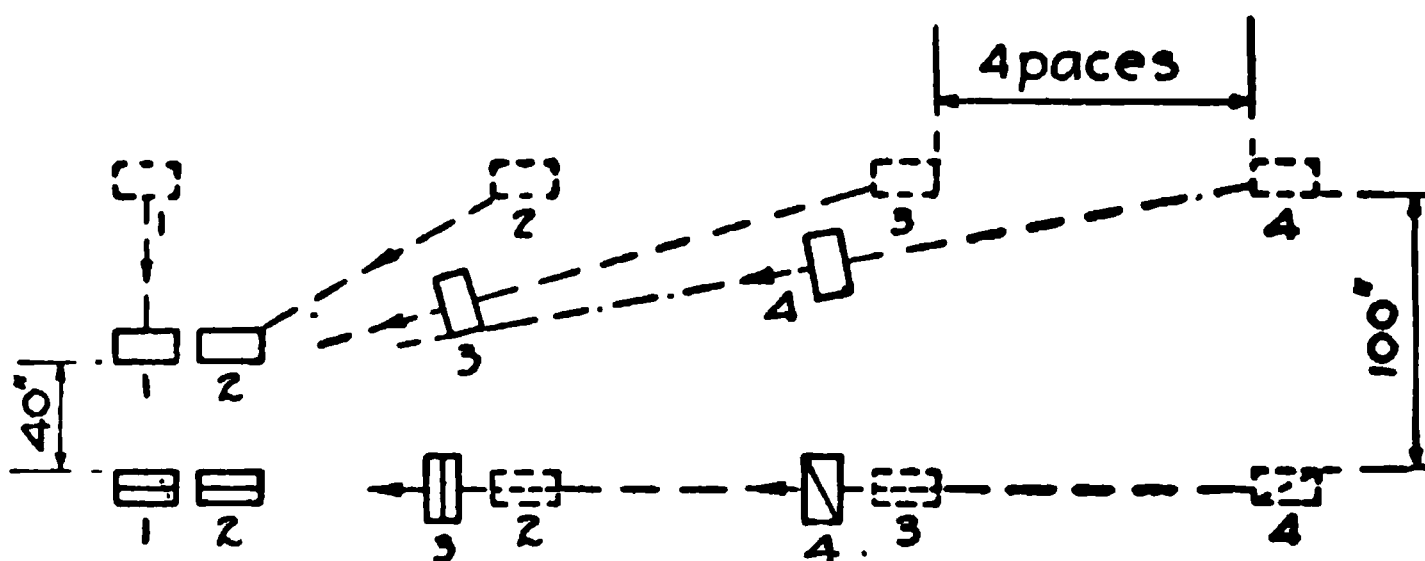


PLATE 53.—1. *Assemble to the Right*, 2. MARCH.

81. Being in line at a halt, the command is: 1. *Take distance*, 2. MARCH, 3. *Squad*, 4. HALT.

At the command MARCH, No. 1 of the front rank moves straight to the front; Nos. 2, 3 and 4 of the front rank and Nos. 1, 2, 3 and 4 of the rear rank, in the order named, move straight to the front, each stepping off so as to follow the preceding man at four paces. For example: No. 2 front rank follows No. 1 front rank at four paces, No. 3 front rank follows No. 2 front rank, No. 4 front rank follows No. 3 front rank; No. 1 rear rank follows No. 4 front rank; No. 2 rear rank follows No. 1 rear rank; No. 3 rear rank follows No. 2 rear rank and No. 4 rear rank follows No. 3 rear rank. The command HALT is given when all have their distance.

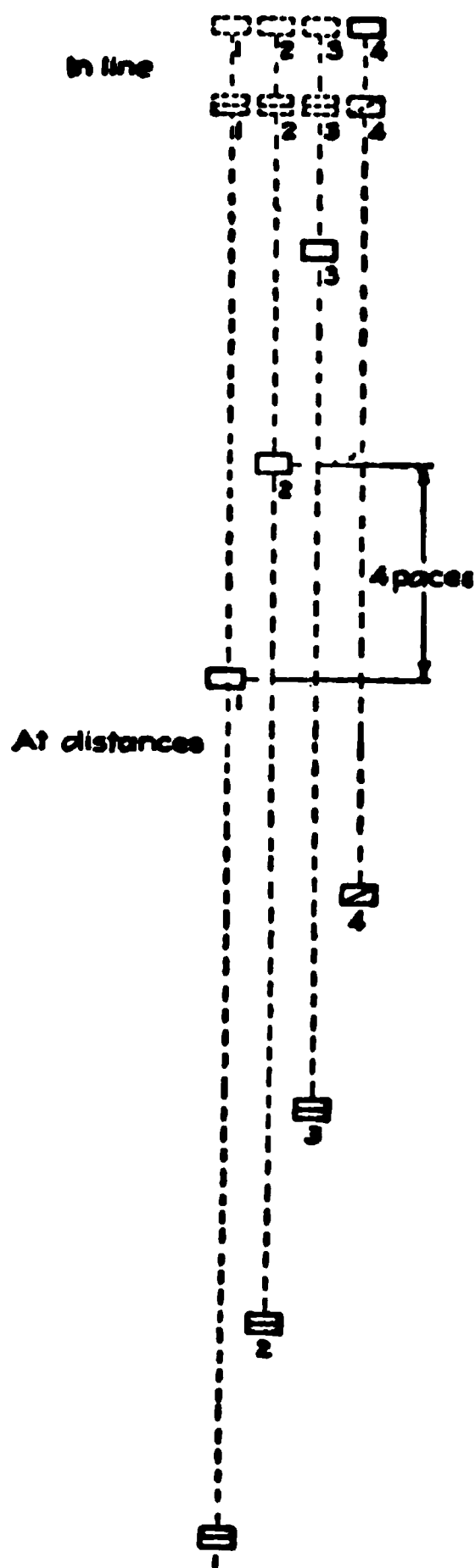
In case more than one squad is in line, each squad executes the movement as above. The guide of each rank of numbers is right. The file closers follow No. 4 of the rear rank at four paces.

The front-rank men should walk straight to the front and their rear-rank men should cover them accurately as shown in Plate 54.

Being at distances, to assemble the squad, the command is: 1. *Assemble*, 2. MARCH.

No. 1 of the front rank stands fast; the other members of the squad move forward at the command MARCH to their proper places in line. Each man upon arriving on the line brings up his left arm as in forming the squad.

Caution. Always assemble your men to the front.



The squad being in line at a halt.
1 Take distance, 2 MARCH.

PLATE 54.
1. *Take Distance*,
2. MARCH.

To Stack and Take Arms.

(These are two hard movements which will be difficult to understand until you have had them at drill.)

82. Being in line at a halt: **STACK ARMS.**

Each even number of the front rank grasps his piece with the left hand at the upper band and rests the butt between his feet, barrel to the front, muzzle inclined slightly to the front and opposite the center of the interval on his right, the thumb

PLATE 55.

PLATE 56.

and forefinger of the left hand raising the stacking swivel. Each even number of the rear rank then passes his piece, barrel to the rear, to his file leader, who grasps it between the bands with his right hand and throws the butt about two feet in advance of that of his own piece and opposite the right of the interval, the right hand slipping to the upper band, the thumb and forefinger raising the stacking swivel, which he engages with that of his own piece, which is on the left. Each odd number of the front rank raises his piece with the right hand, carries it well forward, barrel to the front; the left hand guiding the stacking swivel, engages the lower hook of the swivel of his own piece with the free hook of that of the even number of the rear rank; he then turns the barrel of his rifle outward into the angle formed by the other two pieces and lowers the butt to the ground, to the right of and against the toe of his right shoe.

The stacks made, the loose pieces are laid on them by the even numbers of the front rank.

When the stack is made each man takes the position of a soldier. Many men forget to do this.

The secret of getting a good straight line of stacks lies in having the line accurately dressed before the arms are stacked. The men must be trained not to move the feet in the process of making the stacks.

PLATE 57.

PLATE 58.

83. Being in line behind the stacks: TAKE ARMS.

The loose pieces are returned by the even numbers of the front rank. Each even number of the front rank grasps his own piece with the left hand, the piece of his rear-rank man with the right hand, grasping both pieces between the bands; each odd number of the front rank grasps his piece in the same way with the right hand, disengages it by raising the butt from the ground, and then turning the piece to the right detaches it from the stack. Each even number of the front rank then disengages and detaches his piece by turning it to the left, and passes the piece of his rear-rank man to him and all resume the order at attention.

PLATE 59.

PLATE 60.
TAKE ARMS.

PLATE 61.

Should any squad have Nos. 2 and 3 blank files, No. 1 rear rank takes the place of No. 2 rear rank in making and breaking the stack. After the stacks are made or broken he resumes his post.

Pieces that are not used in making the stack are termed *loose pieces*.

Pieces are never stacked with the bayonet fixed.

As both Take and Stack Arms are hard movements, it is well during the early instruction to have the rear rank change places with the front rank and the odd numbers change places with the even numbers within each rank. If this is done and the stacks are made and then arms are taken correctly, it will insure that every man understands the movements.

84. The following definition and arm signals should be learned before going to the next movement:

Deploy: To extend the front. In general to change from column to line, or from close to extended order. To deploy a squad means to place the men all on one line with greater intervals than they have in close order formation. The commands are: 1. *As skirmishers*, 2. MARCH.

The term deploy usually conveys the meaning of going from a close to an extended order or battle formation.

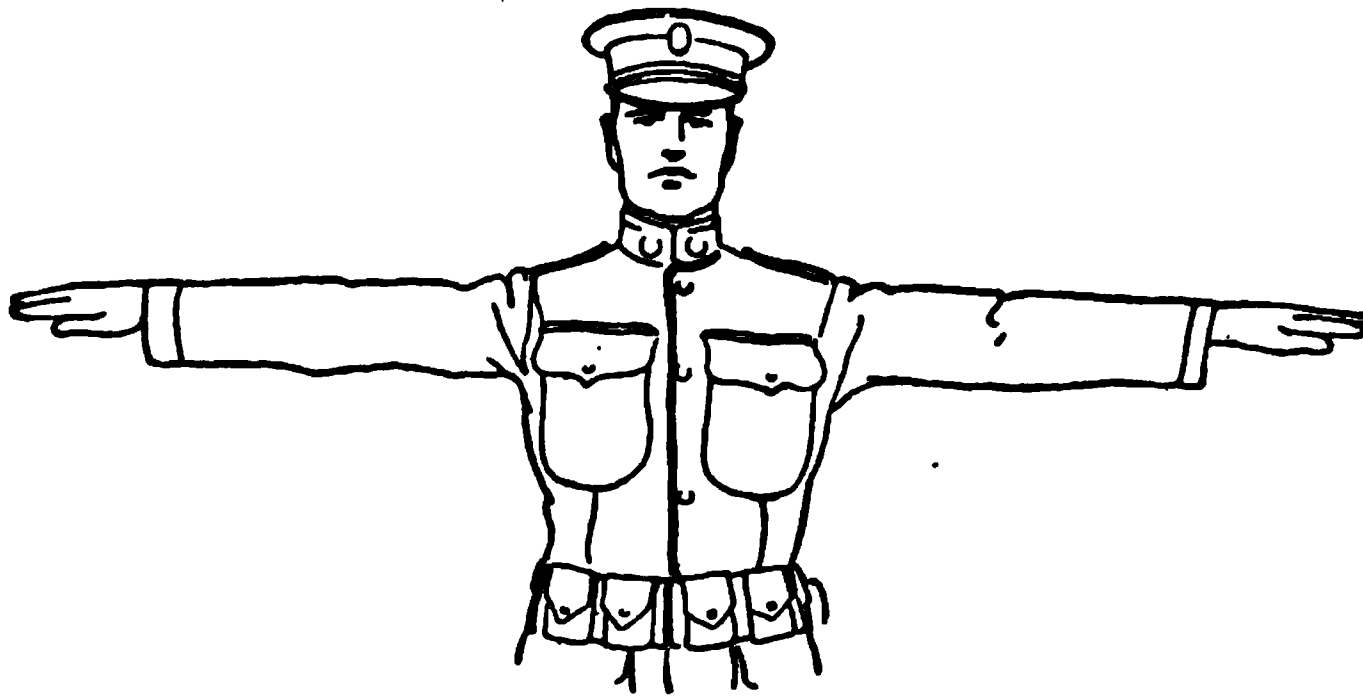


PLATE 62.—*As Skirmishers*, MARCH.

Arm Signals.

As skirmishers, MARCH: Raise both arms laterally until horizontal. If necessary lower the arm in the direction of march after completion of signal.

Halt: Carry the hand to the shoulder, thrust the hand upward and hold the arm vertical.

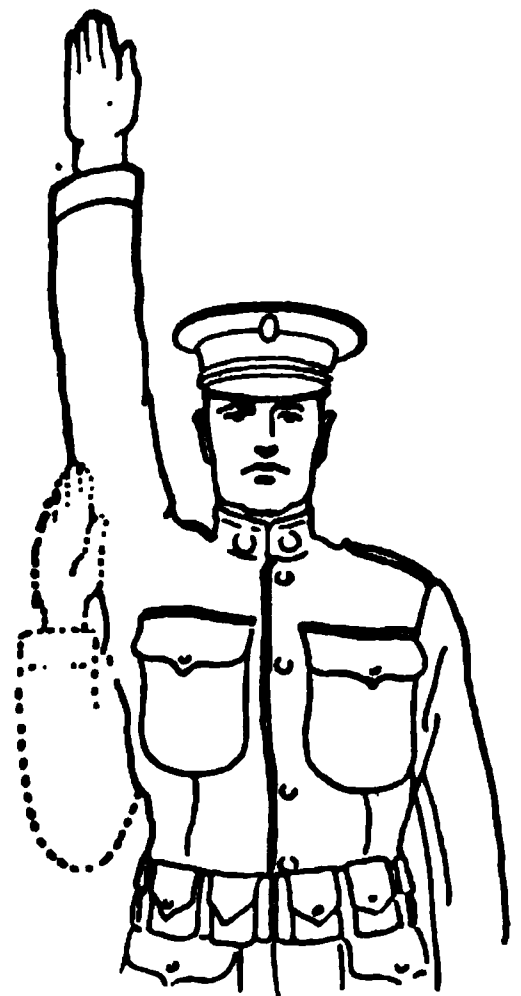
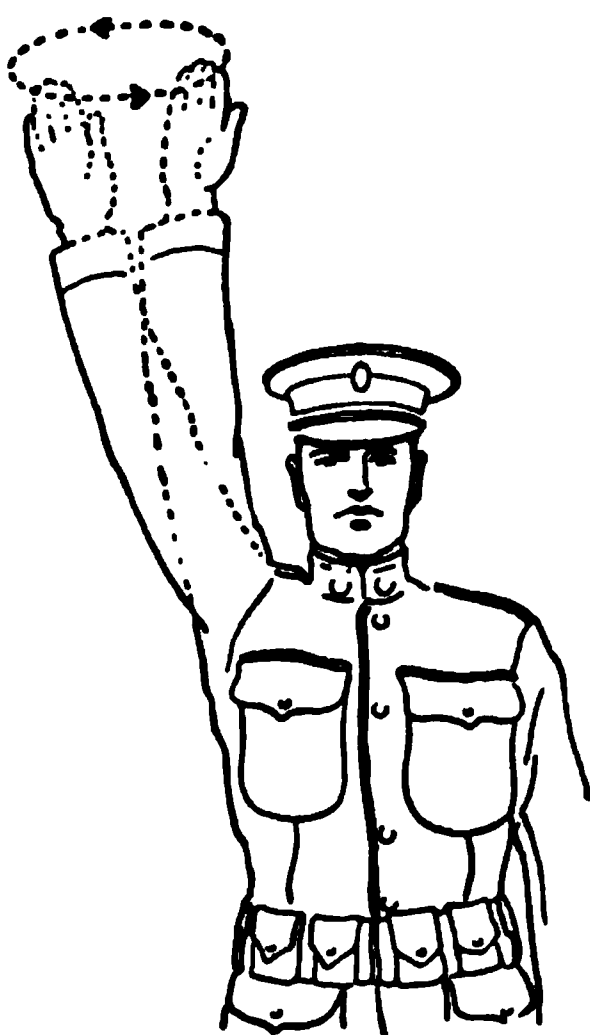


PLATE 63.—HALT.

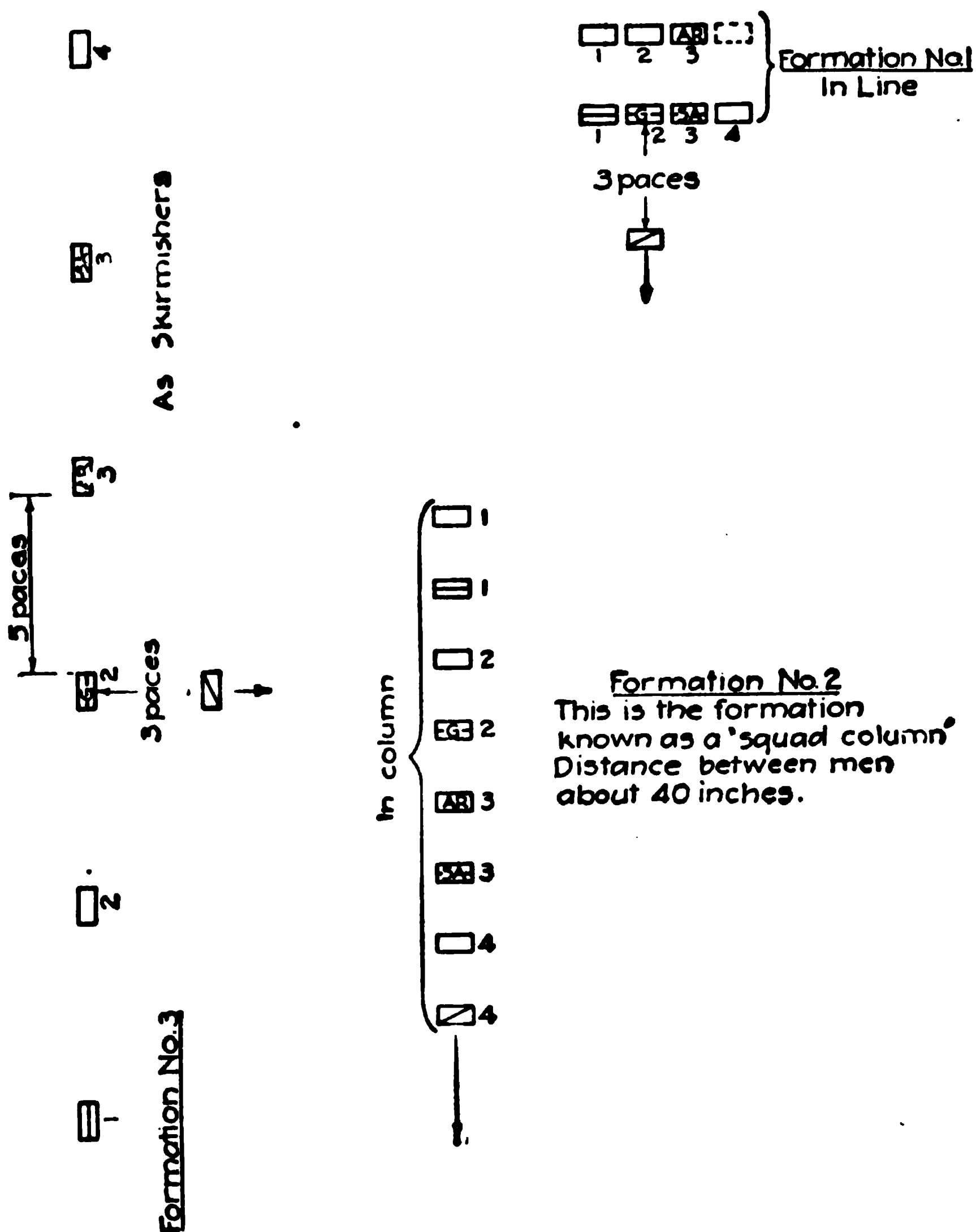


Assemble, MARCH: Raise the arm vertically to its full extent and describe large horizontal circles.

PLATE 64.—*Assemble*, MARCH.

To Follow the Corporal.

85. Being assembled or deployed, to march the squad without unnecessary commands, the corporal places himself about three paces in front of it and commands: FOLLOW ME.



The squad may be in any of the above formations in 'FOLLOW ME'.

PLATE 65.—FOLLOW ME.

If in line or skirmish line, No. 2 of the front rank follows in the trace of the corporal at about three paces; the other men conform to the movements of No. 2, guiding on him and maintaining their relative positions.

If in column the head of the column follows the corporal.

The men carry their pieces in the same manner as the corporal.

The corporal must remember that there are seven men behind him and that he should regulate his march accordingly. On all turns he should slow down so as to allow the squad to turn without losing the formation.

To Deploy as Skirmishers.

86. Being in any formation, assembled, the command is: 1. *As skirmishers*, 2. MARCH.

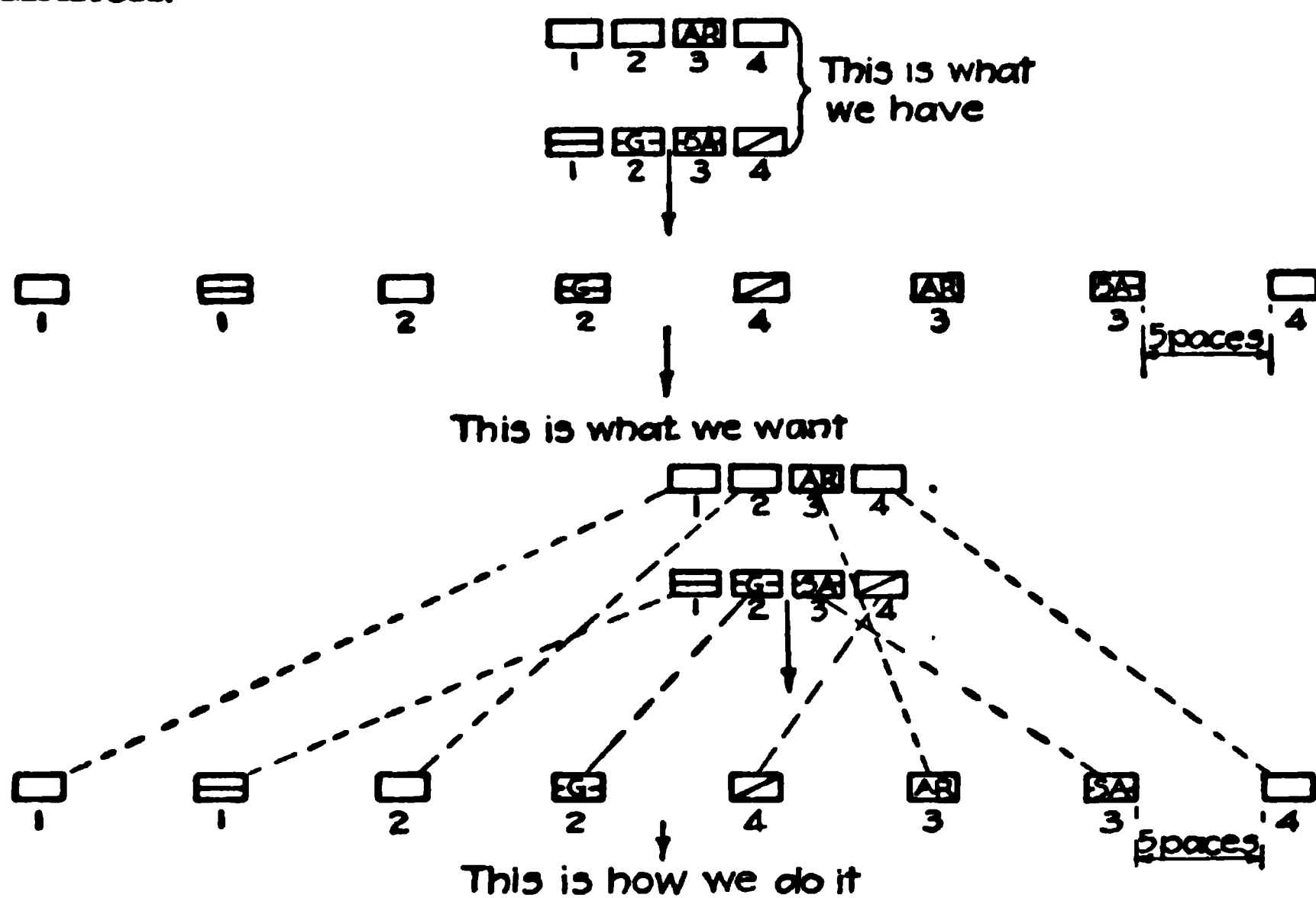


PLATE 66.—1. *As Skirmishers*, 2. MARCH.

The corporal places himself in front of the squad, if not already there. *Moving at a run* the men place themselves abreast of the corporal at five-pace intervals. Nos. 1 and 2, front and rear rank on his right, Nos. 3 and 4 front and rear rank on his left; rear-rank men on the right of their file leaders, extra men on the left of No. 4; all then conform to the corporal's gait. Remember the rear-rank man is always on the right of his file leader. (A common error is for beginners to execute the movement at a slow trot when a run is required, and not to get enough interval.)

When the squad is acting alone (drilling alone under the direction of the corporal), a skirmish line is similarly formed on No. 2 of the front rank, who stands fast or continues the march, as the case may be; the corporal places himself in front of the squad when advancing and in rear when halted.

When deployed as skirmishers the men march at ease, pieces at the trail unless otherwise ordered.

The corporal is the guide when in line, otherwise No. 2 front rank is the guide.

The normal interval between skirmishers is five paces. The front of a squad thus deployed as skirmishers is about 40 yards.

To Increase or Diminish Intervals.

87. If assembled and it is desired to deploy at other than the normal interval, or if deployed and it is desired to increase or decrease the interval, the command is: 1. *As skirmishers (so many) paces*, 2. MARCH.

Intervals are taken at the indicated number of paces. If already deployed the men move by the flank toward or away from the guide. For instance, let us suppose the squad is deployed with normal intervals or five paces between skirmishers and the command is: 1. *As skirmishers, 10 paces*, 2. MARCH. The corporal stands

fast, assuming the squad is halted; Nos. 1 and 2 front and rear rank move by the right flank taking interval of 10 paces; Nos. 3 and 4 front and rear rank do likewise to the left.

The Assembly.

88. Being deployed, the command is: 1. *Assemble*, 2. MARCH.

The men move toward the corporal in double time and form in their proper places. If the corporal continues to advance, the squad follows at three paces. If he stands fast the men form on him so that he will be in ranks as No. 4 front rank. The assembly while marching to the rear is not executed. Notice that the assembly is made at a double time, whereas the deployment is made at a run.

Kneeling and Lying Down.

Hints to students. The way to learn quickly the following movements is to get your rifle, read each movement carefully, then execute it, and check your position with the one shown in the plate.

89. If standing: KNEEL.

Half face to the right, carry the right toe about 1 foot length to the left rear of the left heel; kneel on right knee, sitting as nearly as possible on the right heel; left forearm across the left thigh; piece remains in position of order arms, right hand grasping it above the lower band.

90. If standing or kneeling: LIE DOWN.

Kneel, but with right knee against left heel, carry back the left foot and lie flat on the belly, inclining body about 35° to the right; piece horizontal, barrel up, muzzle off the ground and pointed to the front; elbows on the ground, left hand at the balance, right hand grasping the small of the stock opposite the neck. This is the position of order arms, lying down.

91. If kneeling or lying down: RISE.

If kneeling, stand up faced to the front, on the ground marked by the left heel. If lying down, raise body on both knees, stand up faced to the front on the ground marked by the knees.

92. If lying down: KNEEL.

Raise the body on both knees; take up the position of kneel.

93. In double rank the positions of kneeling and lying down are ordinarily used only for better utilization of cover. PLATE 67.—KNEEL.

When deployed as skirmishers a sitting position may be taken in lieu of the kneeling position.

94. When possible or when time is available the instruction in the "loadings and firing," "the use of cover," "observation movements," etc., come at this



PLATE 68.—LIE DOWN.

CHAPTER II.

PHYSICAL TRAINING.

Let us have the temples of our souls healthy, vigorous and pure.

Need and Object of Physical Training.

Look at Plate 69 shown below. It will tell you something that will surprise you. It will tell you something that will embarrass you. It will tell you something that ought to be corrected.

Before any man was considered qualified to serve under the colors during the recent war he had to undergo a rigid physical examination. The percentages of physically qualified men throughout the U. S. is shown graphically in the map.

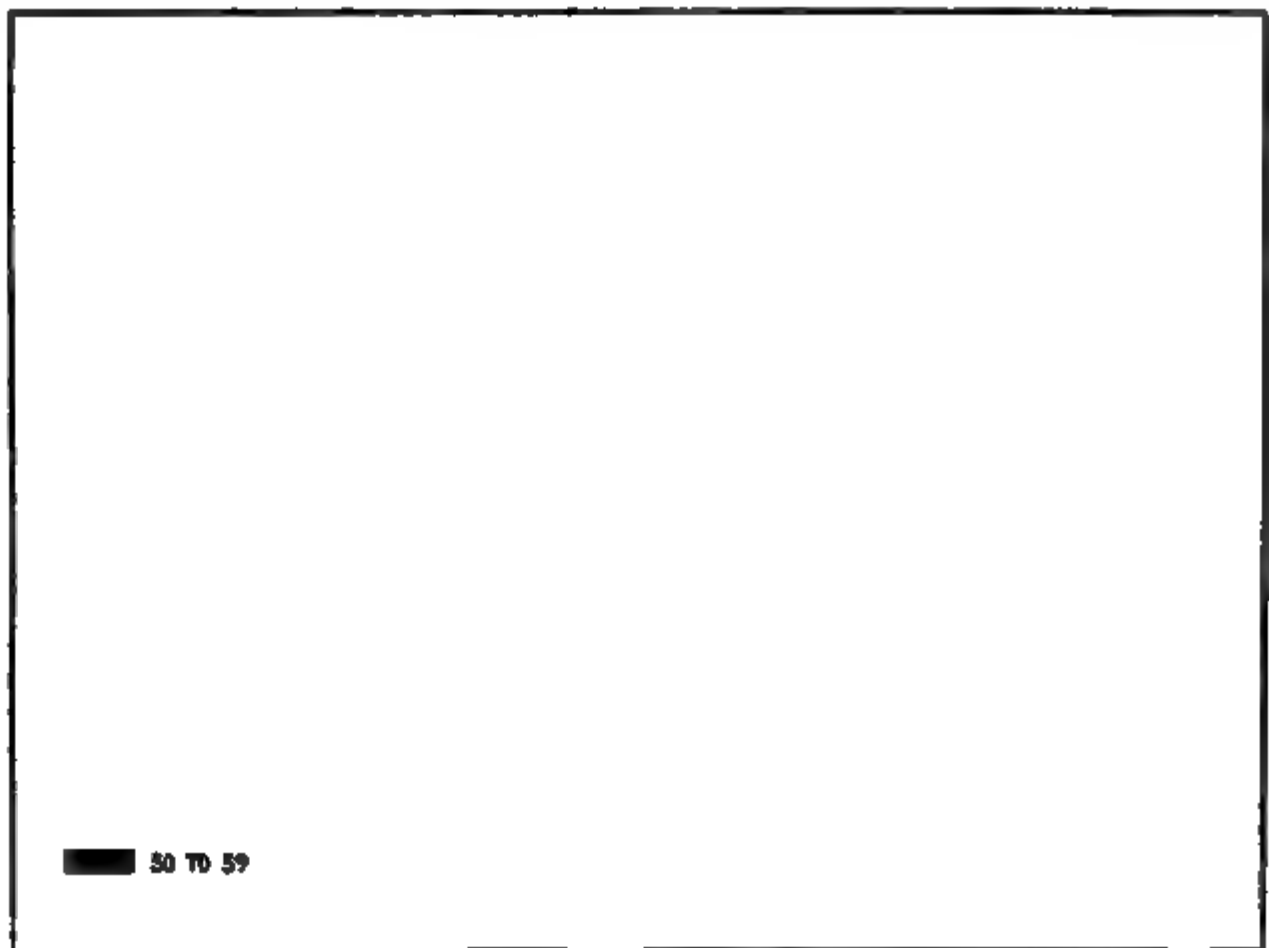


PLATE 69.—Per Cent of Drafted Men Passing Physical Examination by States.

First come those states which are shown in white. These are the states which sent men of so high an order of physical condition that from 70 to 80 per cent of them survived the two examinations, and were accepted into the military service. It is noteworthy that these states constitute about one-quarter of all and are mostly located in the Middle West. Next comes the states from which 65 to 69 per cent of the applicants were accepted, and these are indicated by light cross-hatching. This group is about equal in numbers to the first, and most of them are contiguous to the first group either on the east or west. The third group makes still poorer records. Here from 60 to 64 per cent of the young men passed the tests. The states are indicated by heavy diagonal bars. Most of them were in the

south and far west. Finally there is a group of states, including, like each of the other groups, about one-quarter of all, that are indicated on the map in solid black. Here are the states from which 50 to 59 per cent of the candidates were accepted. They are found in the northeast and the far west, especially in those portions of the west which have in recent years become popular as health resorts and so have attracted large numbers of physically subnormal people. In general, it is noteworthy that the best records are made by those states that are agricultural rather than industrial and where the numbers of recently arrived immigrants are not large. Conversely, most of the states making low records are pre-eminently manufacturing states and also have in their populations large numbers of recently arrived immigrants.

Further analysis of the records of physical examinations shows that the country boys made better records than those from the cities; the white registrants better than the colored; the native-born better records than those of alien birth. These differences are so considerable that 100,000 country boys would furnish for the military service 4790 more soldiers than would an equal number of city boys. Similarly, 100,000 whites would furnish 1240 more soldiers than would an equal number of colored. Finally, 100,000 native-born would yield 3500 more soldiers than would a like number of foreign born. The importance of these differences may be appreciated by noting that 3500 men are equivalent to an infantry regiment at full war strength. An American regiment stopped the last German drive on the Marne.

Object of Physical Training.

The object of physical training is more than the development of muscles. It should:

- a. Build up the men physically and thus increase their muscular strength and endurance.
- b. Wake them up mentally.
- c. Fill them with enthusiasm.
- d. Discipline them.

Scope.

A thorough course of military physical training should embrace:

1. Setting-up exercises.
2. Marching at quick and double time and running.
3. Dumb-bell, club and rifle exercises.
4. Climbing.
5. Jumping.
6. Apparatus work.
7. Gymnastic contests.
8. Athletics.
9. Swimming.¹
10. Boxing and wrestling.

¹ Boy Scout Swimming Requirements: A boy scout to obtain a merit badge for swimming must be able to do the following:

1. Swim one hundred yards.
2. Dive properly.
3. Demonstrate breast, crawl and side strokes.
4. Swim on his back for fifty feet.

Proper Utilization of Time.

Due to the small amount of time allotted to physical training, it is only possible in most cases to give the student a very limited physical training course consisting of setting-up exercises and marching at quick or double time and running. The very fact that only a very small percentage of the students' time is allotted to this training makes it imperative that this time be properly utilized. Therefore the physical training course should be carefully planned and efficiently conducted to accomplish an all-around development in which each muscle is properly developed. The course outlined in this text corresponds to what is known as the Recruit Course in the Army. If it is given correctly, it will produce the results mentioned above. It is assumed that the physical training in sports and in the gymnasium will be under control of a physical director.

Marching in Quick Time.

Marching in quick time and exercises calling into action the various parts of the body while marching tend to develop co-ordination upon which to a great extent poise, posture, carriage, and rhythm are dependent. Marching in double time is a heart and lung development exercise of moderate severity. Running, on the other hand, especially when continued for long periods, or at a high rate of speed, or when taken in conjunction with leg exercises, affect those organs in a very marked degree. Both double timing and running are invaluable in the development of endurance and organic vigor. When given and executed properly setting-up exercises and marching exercises are the best of disciplinary drills.

Methods.

Assuming that the course will consist of setting-up and marching exercises, each drill period should be carefully planned, due consideration being given to:

- a. The condition and physical aptitude of the men.
- b. The time.
- c. Selection of exercises.

The question of the physical aptitude, general condition, etc., of the men is a very important one, and it should always determine the kind and extent of the exercises expected of them. Colonel Koehler, the physical director at West Point, says: "Underdoing is rectifiable, overdoing is often not." Keep in mind the fact that each of the following exercises, if continued too long, exhausts a muscle or a set of muscles. Each exercise should be discontinued just before the muscles it is intended to exercise become tired. Aim at exercising, not tiring the muscles.

When Physical Training Should Be Given.

When possible, physical training drills should be held in the morning about two hours after breakfast, and at no time should they be held immediately before or after a meal. The selection of the proper exercises to be given during each drill is most important. Setting-up exercises are often given to kill time or because the schedule calls for physical training. The result is the exercising of those muscles that need development least and the overlooking of those under-developed muscles. Every exercise has a function peculiarly its own. In other words, each exercise has a certain effect upon a certain part or parts of the body and plays a rôle in the development of the men. It is, therefore, the sum of these various exercises properly grouped that constitutes the method. So far as is possible, every lesson should be planned to embrace setting-up exercises that call into action all parts of the body.

The best results are obtained when those exercises which affect the extensor muscles chiefly are followed by those affecting the flexors, *i. e.*, flexion should always be followed by extension, or vice versa. For instance, stretching the arms upward

exercises the extensor muscles of the arms, while bringing the hands to the shoulders exercises the flexor muscles. It is also advisable that a movement requiring a considerable amount of muscular exertion should be followed by one in which this exertion is reduced to a minimum. Setting-up exercises should start with light, quick, simple exercises; work up to the heavier trunk and body movements and then finish with a few of the light and snappy ones. The drill is tiring and interest is lost if the exercises are not varied.

The instructor must be careful to see that no one part of the body is exercised several times in succession during a drill. It is a good plan to give commands so as to exercise the arms, then the trunk, legs, neck, another trunk exercise, another leg exercise, foot, then back to the head and so on.

Clothing.

Caps or hats should always be taken off before commencing the exercise, and except in cold weather, or for any other good reason, the blouses (coats) should also be taken off. In case they are not taken off, have them unbuttoned, in order that the muscles and organs may be exercised freely and comfortably. Flannels, to absorb perspiration, especially in cold weather, should be worn nearest the body to prevent the possibility of catching cold.

Wool absorbs 30 per cent of moisture; cotton, 21 per cent.

In a word, the dress should be uniform, loose, comfortable and of material to absorb moisture.

Commands.

Too much emphasis cannot be placed upon this subject. Perfect commands insure perfect execution of each exercise while poor commands have the opposite effect. An effort should be made to cultivate a voice which will inspire enthusiasm in the men; a voice that tends to make them execute the exercises with willingness, snap and precision. Quality of voice, not volume, is desirable.

There are two kinds of commands:

The preparatory explains the movement to be executed.

The command of execution causes the execution.

In the command: 1. *Arms forward*, 2. RAISE; the words *arms forward* constitute the preparatory command, and RAISE, the command of execution. Preparatory commands are printed in *italics*, and those of execution in CAPITALS.

Do not be afraid to enlarge upon the preparatory commands for physical training found in this text. The idea is to tell your men what they are to do. For instance, it would be correct in the preceding command to say: 1. *Arms forward, palms down, fingers extended and together*.

The tone of command is animated, distinct, and of a loudness proportioned to the number of men for whom it is intended.

The various movements comprising an exercise are executed by commands and, unless otherwise indicated, the continuation of an exercise is carried out by repeating the command, which usually takes the form of numerals, the numbers depending upon the number of movements that an exercise comprises. Thus, if an exercise consists of two movements, the counts will be one, two; or if it consists of eight movements, the counts will be correspondingly increased; thus every movement is designated by a separate command.

As the exercise commences at the command EXERCISE, the count ONE should be given the instant the first movement is completed. Untrained men often wait for the count ONE before commencing the movement.

Occasionally, especially in exercises that are to be executed slowly, words rather than numerals are used, and these must be indicative of the nature of the various movements, UP, DOWN, RIGHT, LEFT, FORWARD, BACK.

In antagonistic exercises, where one group of muscles is made to antagonize another (tensing exercises), the commands are drawn out still more. In these

exercises words are preferable to numerals. In fact it should be the object of the instructor to convey to the men, by the manner of his command, exactly the nature of the exercise.

Judgment must be exercised in giving commands, for rarely are two movements executed alike. For instance, the arm exercises are short and snappy; hence the command should be given in a smart tone of voice, and the interval between the commands should be short.

The leg exercises cannot be executed as quickly as those of the arm; therefore the commands should be slightly drawn out and follow one another in slower succession.

The trunk exercises, owing to the slowness with which they should naturally be executed, should be considerably drawn out and follow one another in slow succession. Go through the exercise yourself and determine from practical experience the correct cadence. Watch the men carefully and see to it that you are giving commands just fast enough to complete the movement without hurrying.

To Stop an Exercise.

To stop an exercise correctly, that is, to cause each man to stop at the same instant and in the initial position, is a trick of the voice that a *competent* instructor soon acquires. However, it is useless to expect the exercise to be stopped as indicated unless the men are doing the exercise properly and the instructor has their ATTENTION. Assuming this to be the case, the instructor warns them that the command HALT is to follow by raising the inflection on the count or word preceding it (command HALT).

For example:

1. *Arms to the thrust*, 2. RAISE, 3. *Thrust arms upward*, 4. EXERCISE, ONE, TWO, ONE, TWO, O-N-E, HALT; the rising inflection preparatory to the command HALT being placed on the "one" preceding the "HALT" tells each man when to expect the command HALT. Keep the hands at the thrust upon halting.

Hints to Student Instructors.

An untrained, or selfish instructor gives the same commands over and over again. He forgets that his exercises are tiresome and monotonous. He forgets that others have to suffer and not he. He forgets that when he has exercised the arms he should go to some other part of the body. He does not realize that there is a well-co-ordinated relation between the muscles and the organs of the body, and that all of these should be given different kinds of exercise. He often forgets to allow his men to relax and rest after some hard work.

Formations.

The command should be required to take distance as described in Infantry Drill Regulations, and then to face to the left or right so that each number will cover in file.

There is another way of extending a detachment which is quicker than the one indicated by Plate 70 and is the most practical one to use when working with groups of one or more companies.

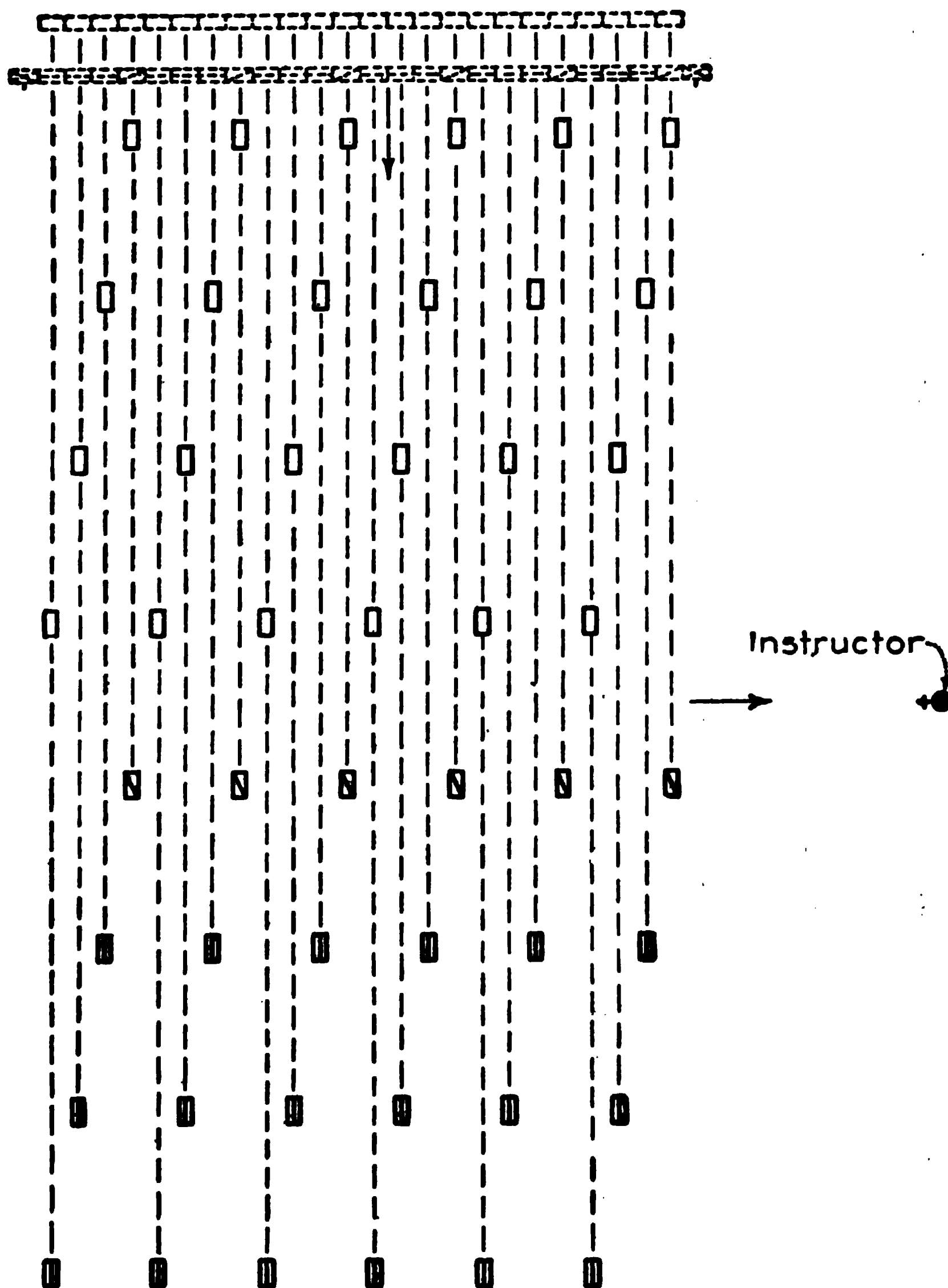
Being in column of squads facing the instructor, the command is:

1. *Extend on numbers one*, 2. MARCH, 3. *Arms*, 4. DOWN, 5. *Rear rank to the right*, 6. JUMP.

At the second command (MARCH), numbers two, three and four both ranks run out to the left two, four and six steps respectively and halt facing the instructor; number one front and rear rank stand fast. All, including number one, raise their arms sideward (palms down) horizontally as soon as they individually reach their new places.

The arms are lowered smartly to the sides at the command Down.

At the command JUMP each rear rank man, including number one of the rear rank jumps to the right squarely into the middle of the interval on his right. In making

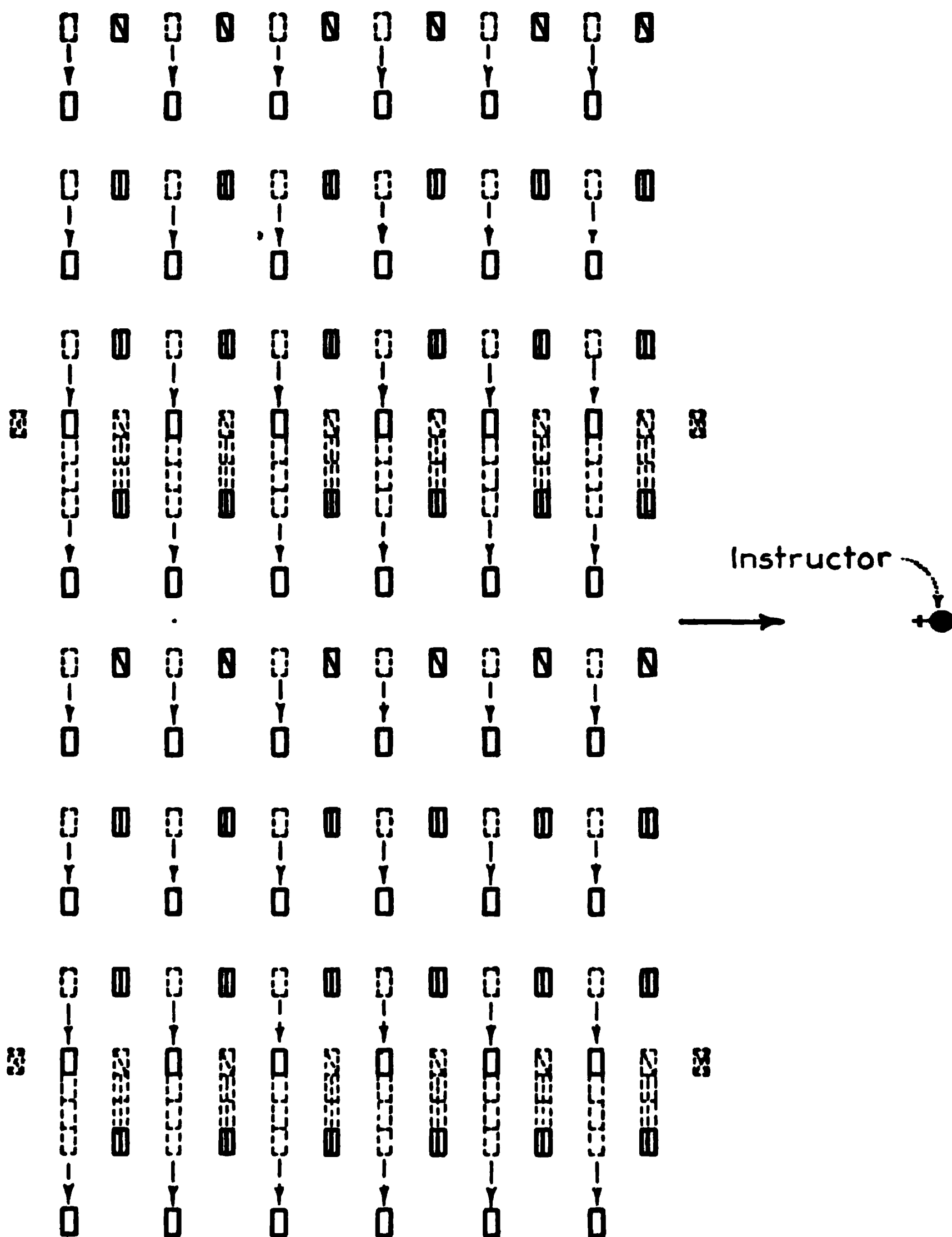


Being in line at a halt, to form for physical drill:
 1. Take distance, 2. MARCH, 3 Platoon, 4 HALT, 5. Left,
 6. FACE.

Note The guides, unless otherwise directed, place themselves in the line of file closers at the first command.

PLATE 70.—A Formation for Physical Drill.

this jump or hop the legs are separated, the body is shoved off with the left leg, alights on the right leg and the left heel is brought up to the right with a click.
 All of the numbers cover in file from front to rear.



Being in line of platoons, to form for physical drill:
 1. Extend on numbers one, 2 MARCH, 3. Arms, 4 DOWN,
 5. Rear rank to the right, 6 JUMP.

Note The guides and file closers form in rear of their platoons at the first command

PLATE 71.—Another Formation for Physical Drill.

Being in the above formation, to assemble, the command is:

1. Assemble on Number One, 2. MARCH.

At the command MARCH number one of the front rank stands fast; all others return individually to their places in the column of squads.

Position of Attention.

The first position to teach is that of ATTENTION. Not only must the body be in the position described in paragraph 4, Infantry Drill Regulations, but the mind must be at attention and each man on the alert. To start giving any exercise before each man assumes with snap the correct position of attention is to neutralize the good to be expected from the exercise. In coming to the position of attention, train your men to click the heels together, instantly assume the correct position and then stand still. There are usually a few undisciplined men who are slow in coming to the position of attention or adjust their clothes after they take up the position and thereby detract from the effort of their hard trying comrades.

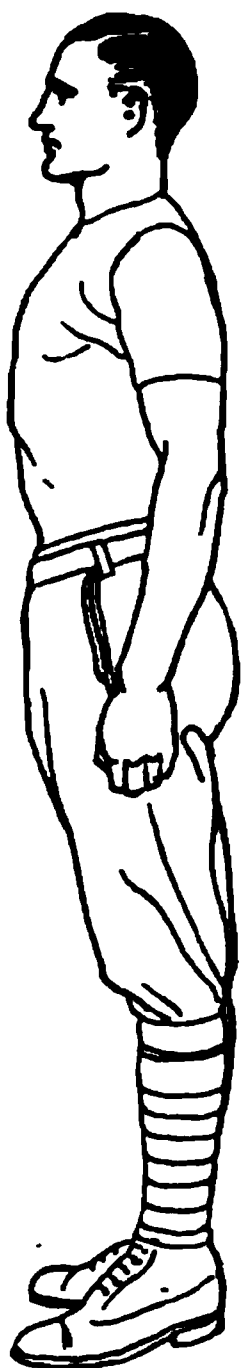


PLATE 72.
Position of
Attention.

Starting Positions.

In nearly all the arm exercises it is necessary to hold the arms in some fixed position from which the exercise can be most advantageously executed, and to which position the arms are again returned upon completing the exercise. These positions are termed *starting positions*; and though it may not be absolutely necessary to assume one of them before or during the employment of any other position of the body, it is advisable to do so, since they give to the exercise a finished, uniform and graceful appearance. All starting positions are taken from the position of a soldier at attention. These starting positions cannot be assumed with too much exactness and pep. They should be taken like lightning if the proper foundation for advanced work is to be laid.

In the following positions, at the command Down, resume the *attention*. Practice in assuming the starting positions may be had by repeating the commands of execution, such as RAISE, DOWN.

Intervals having been taken and attention assumed, the instructor commands: (1) 1. *Arms forward*, 2. RAISE, 3. *Arms*, 4. DOWN. (Plate 73.)

At the command RAISE, raise the arms to the front smartly, extended to their full length, till the hands are in front of and at the height of the shoulders, palms down, fingers extended and joined, thumbs under the index fingers. At DOWN, resume the position of attention.

This exercise can be executed in two counts by the command: 1. *Arms forward and down, two counts*, 2. EXERCISE.

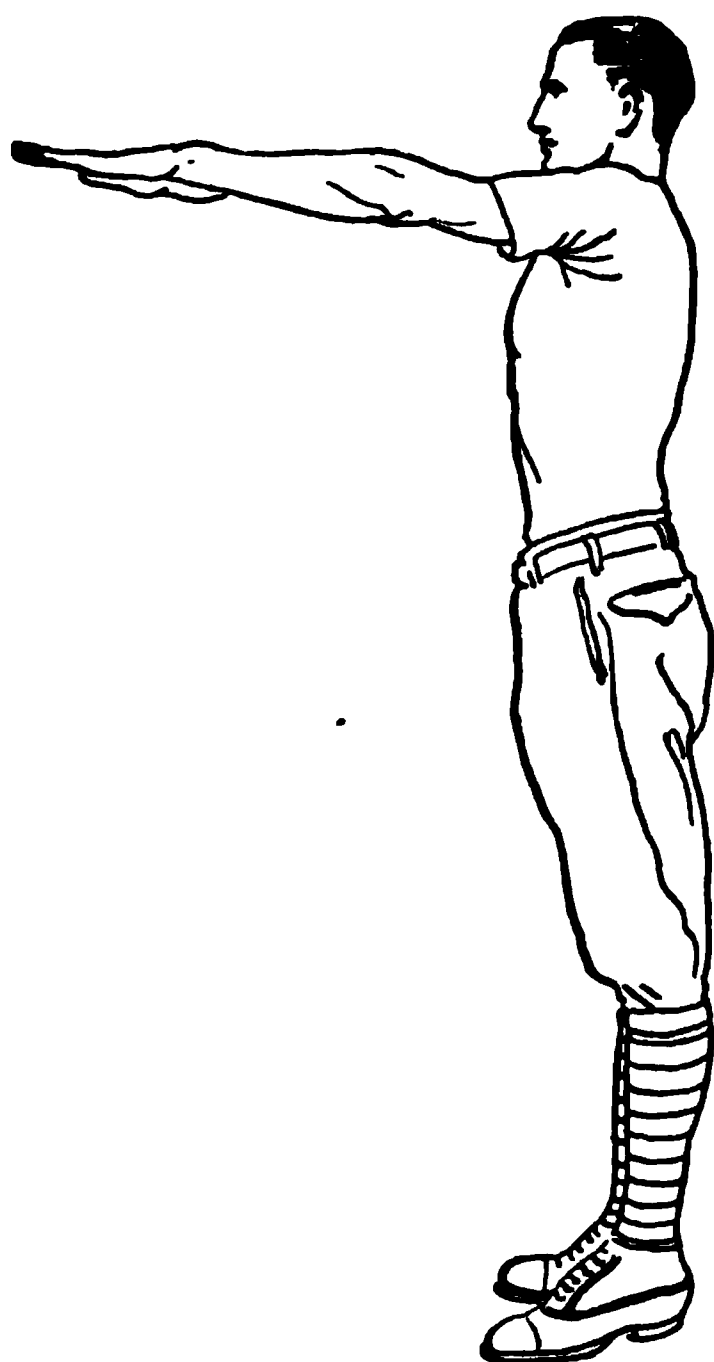


PLATE 73.
1. Arms Forward, 2. RAISE.



(2) 1. *Arms sideward*
Arms, 4. DOWN. (Pla
 At the command RA
 laterally until horizontal,
 as in (1) (Plate 74). Tl
 down smartly without al
 touch the body.

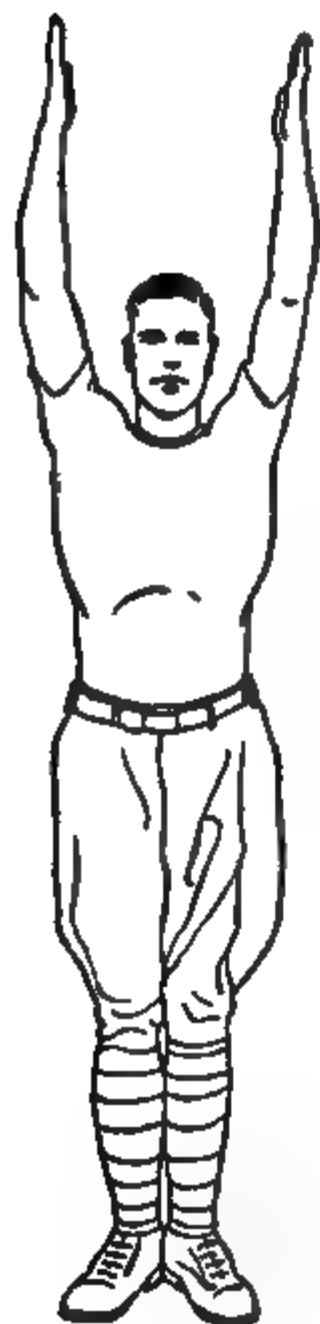


PLATE 75.
 1. Arms Upward,
 2. RAISE.

PLATE 74.
 1. Arms Sideward, 2. RAISE.

(3) 1. *Arms upward*, 2. RAISE, 3.
Arms, 4. DOWN. (Plate 75.)

At the command RAISE, raise the arms from the sides, extended to their full length, with a forward movement, until they are vertically overhead, backs of the hands turned outward, fingers as in (1). This position may also be assumed by raising the arms laterally until vertical. The instructor cautions which way he desires it done.

(4) 1. *Arms backward*, 2. CROSS, 3.
Arms, 4. DOWN. (Plate 76.)

At the command Cross, the arms are folded across the back, hands grasping the forearms.



PLATE 76.
 1. Arms Backward,
 2. Cross.



(5) 1. *Arms to the thrust*, 2. RAISE, 3. *Arms*, 4. DOWN. (Plate 77.)

At the command RAISE, raise the forearms to the front until horizontal, elbows forced back, upper arms against the chest, hands tightly closed, knuckles down.

(6) 1. *Hands on hips*, 2. PLACE, 3. *Arms*, 4. DOWN. (Plate 78.)

At the command PLACE, place the hands on the hips, the fingers in line with the trouser seams; fingers extended and joined, thumbs to the rear, elbows pressed back.

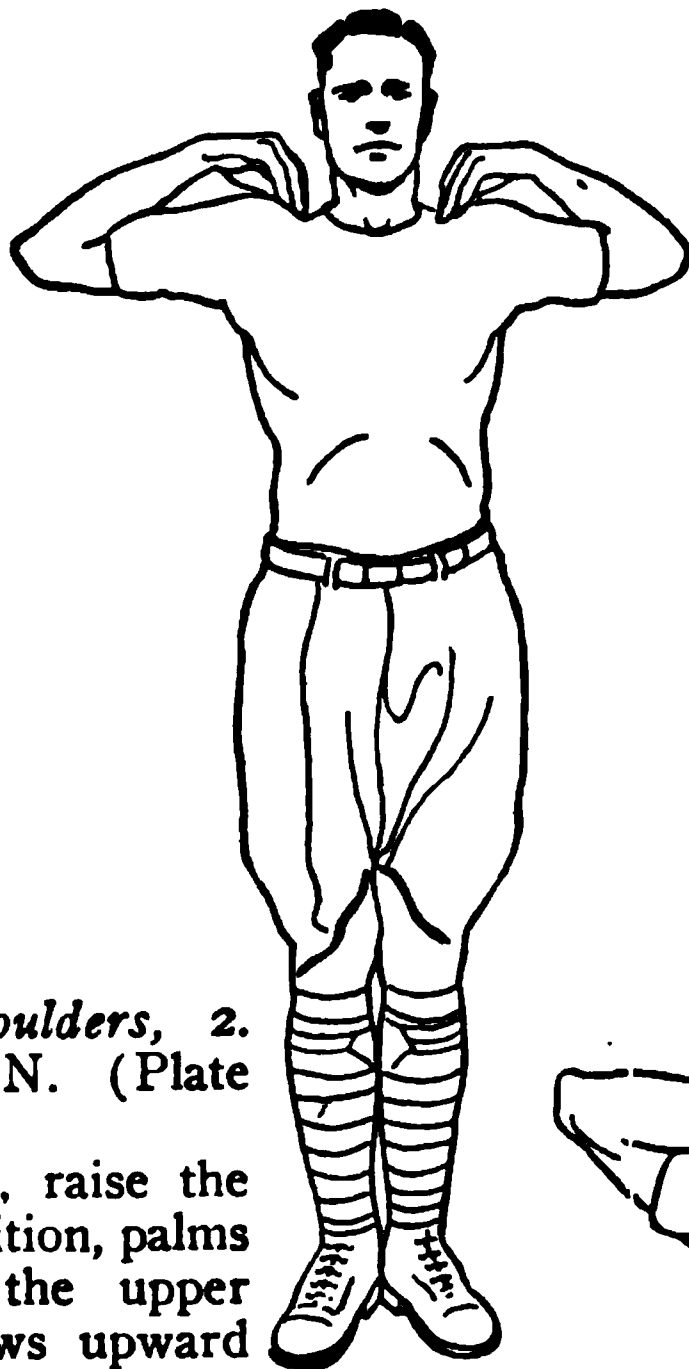


PLATE 77.

1. *Arms to the Thrust*, 2. RAISE.

(7) 1. *Hands on shoulders*, 2. PLACE, 3. *Arms*, 4. DOWN. (Plate 79.)

At the command PLACE, raise the forearms to the vertical position, palms inward, without moving the upper arms; then raise the elbows upward and outward until the upper arms are horizontal; at the same time bending the wrists and allowing the finger tips to rest lightly on the shoulders. All this is done so quickly that it is a continuous motion.

(8) 1. *Fingers in rear of head*, 2. LACE, 3. *Arms*, 4. DOWN. (Plate 80.)

At the command LACE, raise the arms and forearms as described in (7) and lace the fingers behind the lower portion of the head, elbows well up and pressed well back.

These positions should be practiced frequently, and instead of recovering the position of attention after each position, the instructor may change directly from one to another by giving the proper commands instead of commanding 3. *Arms*, 4. DOWN.

For instance: To change from the position described in (7) to that described in (6) (having commanded: 1. *Hands on shoulders*, 2. PLACE), he commands: 1. *Hands on hips*, 2. PLACE.

These changes should, however, be made only after the positions are thoroughly understood and correctly assumed.

PLATE 79.
1. *Hands on Shoulders*,
2. PLACE.

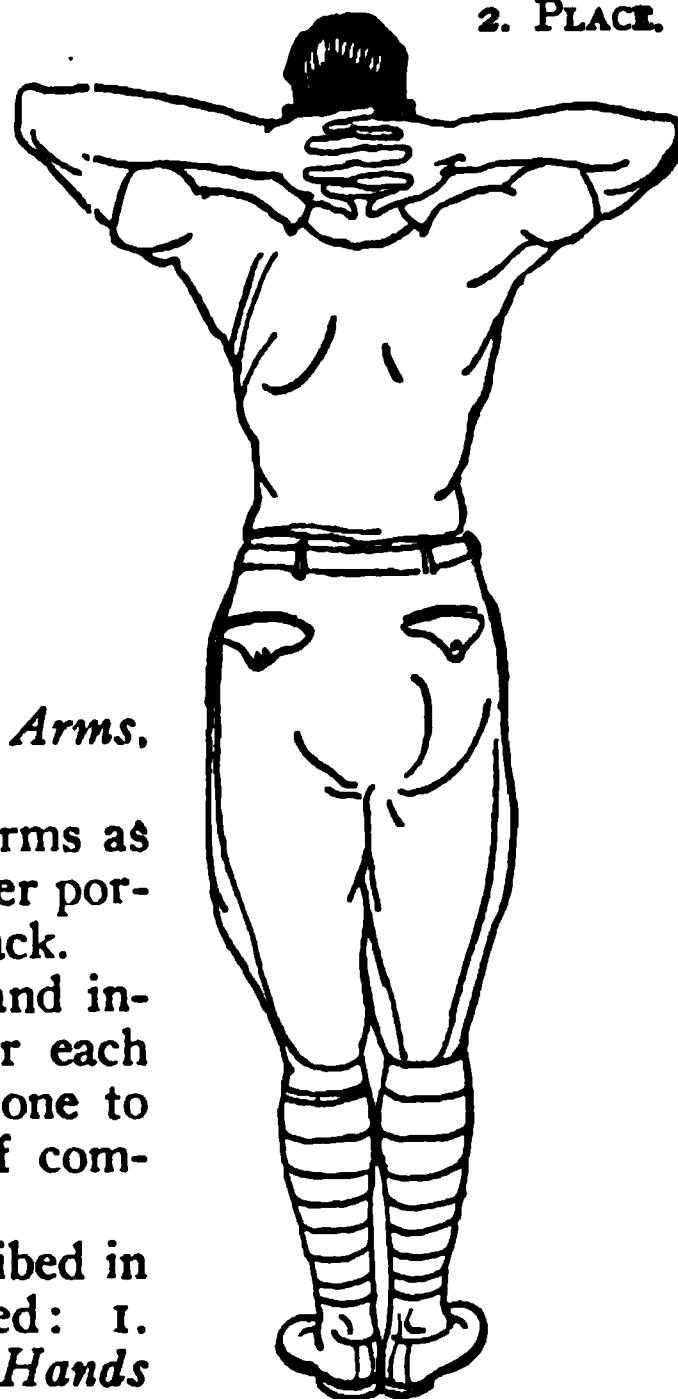


PLATE 78.
1. *Hands on Hips*,
2. PLACE.

PLATE 80.

1. *Fingers in Rear of Head*, 2. LACE.

Setting-Up Exercises.

As has been stated previously, these exercises form the basis upon which the entire system of physical training in the service is founded. Therefore too much importance cannot be attached to them. They should be assiduously practiced, and the fact that they require no apparatus of any description makes it possible to do this out of doors or even in the most restricted room, proper hygienic conditions being the only adjunct upon which their success is dependent. No physical training drill is complete without them. They should always precede the more strenuous forms of training, as they prepare the body for the greater exertion these forms demand.

At the discretion of instructors these exercises may be substituted by others of a similar character. Instructors are cautioned, however, to employ all parts of the body in every lesson and to suit the exercises as far as practicable to the natural function of the particular part of the body which they employ.

Every preparatory command should convey a definite description of the exercise required; by doing so, long explanations are avoided and the men will not be required to memorize the various movements.

Do not be afraid to use other commands or to add to those given in this part of this text. The idea is to tell your men in the preparatory command what you want them to do and the number of counts required, then start them doing the exercise together at the command of execution. By doing the exercise yourself first, you can avoid long explanations and preparatory commands. Long explanations will lose you the attention of your men who want to do the exercises. Take advantage of this fact and have them do each movement of each exercise separately and then in cadence.

To illustrate how to add to the commands, let us consider the commands for the third exercise of the first series which follows the next paragraph. It would be perfectly proper to give the command thus: 1. *Raise and lower the arms to the side horizontal, thus* (instructor executes the movement), *in two counts*, 2. EXERCISE.

Rest.

At the command REST or AT EASE the men, while carrying out the provisions of the drill regulations, should be cautioned to avoid assuming any position that has a tendency to nullify the object of the position of attention; as standing on one leg for instance; allowing the shoulders to slope forward; drooping the head; folding the arms across the chest, etc. The weight should always be distributed equally upon both legs; the head, trunk and shoulders remain exact and the arms held in a position that does not restrict the chest or derange the shoulders. The positions illustrated in Plate 81 have been found most efficacious.

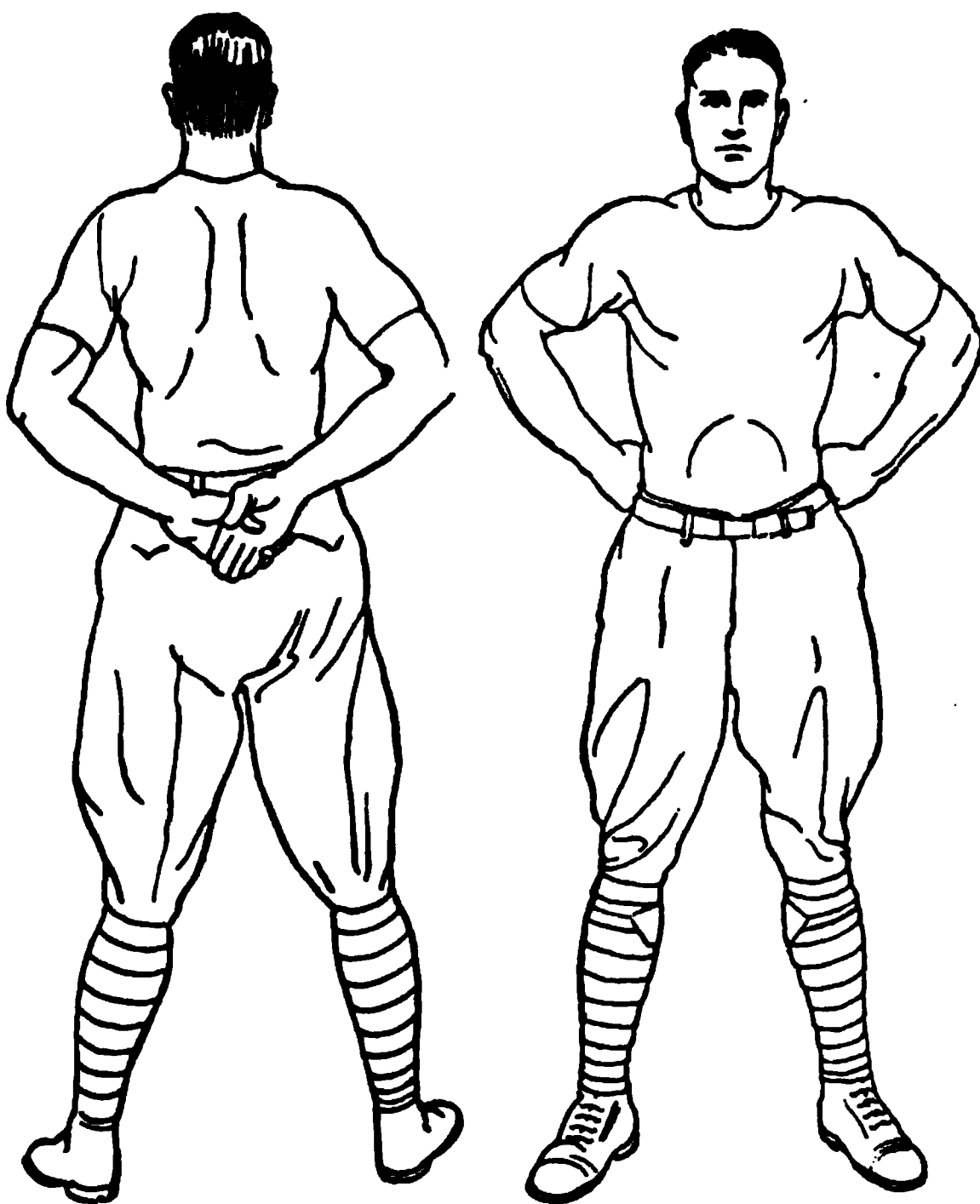


PLATE 81.
REST OR AT EASE.

Recruit Instruction.

First Series.

- (1) Come to the position of attention from AT EASE or REST.
 (2) Take up the various starting positions, Plates 73 to 80. Thus you get your men in hand and start right.

(3) 1. *Raise and lower arms to side horizontal, two counts,* 2. EXERCISE. Repeat 8 to 10 times. (Plate 74.)

The arms rigidly extended are brought to the sides smartly without coming in contact with the thighs. Inhale on the first and exhale on the second count.

(4) 1. *Hands on hips,* 2. PLACE, 3. *Quarter bend trunk forward, two counts,* 4. EXERCISE. Repeat 8 to 10 times. (Plate 82.)

The trunk is inclined forward at the waist about 45° and then extended again; the hips are as perpendicular as possible; execute slowly; exhale on first and inhale and raise chest on second count.

(5) 1. *Arms to thrust,* 2. RAISE, 3. *Raise shoulders, two counts,* 4. EXERCISE. Repeat 8 to 10 times. (Plate 83.)

The shoulders are raised as high as possible without deranging the position of the body or head and lowered back to position; execute briskly; inhale on first and exhale on second count.

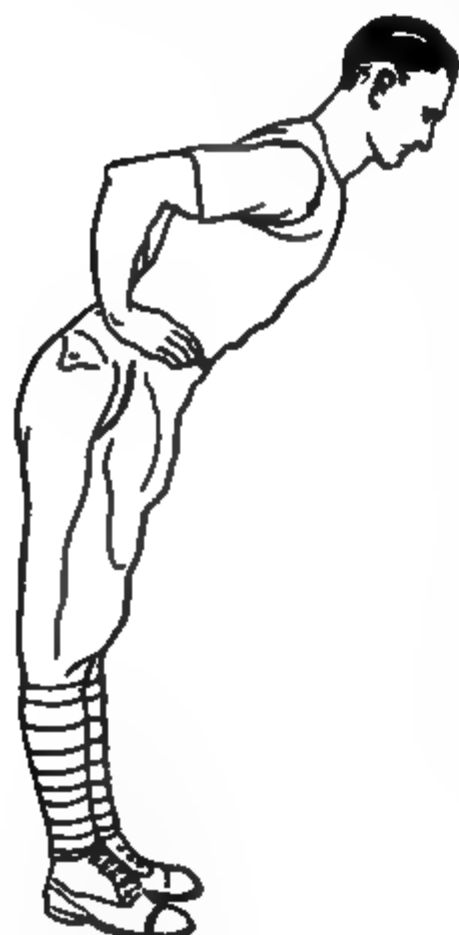


PLATE 82.
Quarter Bend
Trunk
Forward.

PLATE 83.
Raise Shoulders.

(6) 1. *Hands on hips,* 2. PLACE, 3. *Quarter bend knees, two counts,* 4. EXERCISE. Repeat 8 to 10 times. (Plate 84.)

The knees are flexed until the point of the knees is directly over the toes; whole foot remains on ground; heels together; head and trunk erect; execute moderately fast, emphasizing the extension; breathe naturally.

PLATE 84.
Quarter Bend
Knees.

- (7) 1. *Arms backward*, 2. CROSS, 3. *Rise on toes, two counts*, 4. EXERCISE. Repeat 8 to 10 times. (Plate 85)

The body is raised smartly until the toes and ankles are extended as much as possible; heels closed; head and trunk erect; in recovering position heels are lowered gently; breathe naturally.

- (8) 1. *Breathing exercise*, 2. INHALE, 3. EXHALE.

At INHALE the arms are stretched forward overhead and the lungs are inflated; at EXHALE the arms are lowered laterally and the lungs deflated; execute slowly; repeat four times.

Second Series.

- (1) Position of attention, as in First Series.

- (2) Repeat First Series, doing each exercise only a few times.

- (3) 1. *Hands on shoulders*, 2. PLACE, 3. *Extend arms forward, two counts*, 4. EXERCISE. Repeat 8 to 10 times.

The arms are extended forward forcibly, palms down, and brought back to position smartly, elbows being forced back; exhale on first and inhale on second count.

- (4) 1. *Hands on hips*, 2. PLACE, 3. *Bend trunk backward, two counts*, 4. EXERCISE. Repeat 6 to 8 times. (Plate 86.)

The trunk is bent backward as far as possible; head and shoulders fixed; knees extended; feet firmly on the ground; hips as nearly perpendicular as possible; in recovering care should be taken not to sway forward; execute slowly; inhale on first and exhale on second count.

- (5) 1. *Arms to the thrust*, 2. RAISE, 3. *Move shoulders forward, two counts*, 4. EXERCISE. Repeat 8 to 10 times. (Plate 87.)

The shoulders are relaxed and moved forward and in as far as possible and then moved backward without jerking; head and trunk erect; execute slowly; exhale on first and inhale on second count.

(6) 1. *Arms backward*, 2. CROSS, 3. *Half bend knee, two counts*, 4. EXERCISE. Repeat 8 to 10 times. (Plate 88.)

The knees are separated and bent half way to the ground, point of the knees being forced downward; head and trunk erect; execute smartly and emphasize the extension; breathe naturally.

(7) 1. *Hands on hips*, 2. PLACE, 3. *Half bend trunk forward two counts*, 4. EXERCISE. Repeat 8 to 10 times. (Plate 89.)

The trunk is inclined forward until it is at right angles to the legs, hips perpendicular; knees extended; head and shoulders fixed; execute moderately slow: exhale on first and inhale and raise chest on second count.

(8) 1. *Hands on shoulders*, 2. PLACE, 3. *Strike arms sideward, two counts*, 4. EXERCISE.

The arms, knuckles down, hands closed, are flung outward forcibly and brought back to the shoulders smartly; execute fast; breathe naturally.

PLATE 88.
Half Bend
Knees.

(9) Breathing exercise, as in First Series.

PLATE 89.
Half Bend Trunk Forward.



PLATE 90.
Bend Trunk Sideward.

Third Series.

(1) Assume the position of attention, as in First Series.

(2) Repeat the Second Series, doing each movement only a few times.

(3) 1. *Raise arms overhead laterally, two counts*, 2. EXERCISE. Repeat 8 to 10 times. (Plate 75.)

The arms, rigidly extended at the elbows, are raised overhead smartly, palms inward, and are brought down the same way; execute moderately fast; inhale on the first and exhale on the second count.

(4) 1. *Hands on hips*, 2. PLACE, 3. *Bend trunk sideward, right (left), two counts*, 4. EXERCISE. Repeat 6 to 8 times. (Plate 90.)

The trunk, stretched at the waist, is inclined sideward as far as possible; head and shoulders fixed; knees extended and feet firmly on the ground; execute slowly; inhale on first and exhale on second count.



PLATE 91.
Bend Head Forward
and Backward.

(5) 1. *Arms to the thrust*, 2. RAISE, 3. *Bend head forward and backward*, four counts, 4. EXERCISE. Repeat 6 to 8 times. (Plate 91.)

The chin is drawn in and the head bent forward, back muscles of the neck being stretched upward; shoulders remain fixed; in recovering the muscles are relaxed; execute slowly; inhale and raise chest on first and exhale on second count. In bending the head backward the muscles of the neck are stretched upward; breathe as before.

(6) 1. *Curl shoulders forward*, two counts, 2. EXERCISE. Repeat 6 to 8 times. (Plate 92.)

The shoulders relaxed are rolled forward as far as possible, arms being rotated forward; they are then rolled backward and the arms are rotated backward; execute slowly; exhale on first and inhale on second count.



PLATE 92.
Curl Shoulders
Forward.

(7) 1. *Hands on hips*, 2. PLACE, 3. *Full bend knees*, two counts, 4. EXERCISE. Repeat 6 to 8 times. (Plate 93.)

parated and bent as much as he knees forced forward and gether; trunk and head erect; athe naturally.

rear of head, 2. LACE, 3. , 5. *Rock*, two counts, 6. EX- 6 to 8 times.

ied on the toes and then by tensions and flexions of the and raised; knees extended; ree from the ground; breathe

ercises as in the First Series.



PLATE 93.
Full Bend Knees.

Fourth Series.

d Series, doing each exercise only a few times. the thrust, 2. RAISE, 3. *Thrust arms forward*, ERGISE. Repeat 8 to 10 times. (Plate 94.)

THE ARMS, ARMS up, are thrust forward forcibly; in recovering, the elbows are forced back; execute moderately fast; exhale on first and inhale on second count.

PLATE 94.
Thrust Arms
Backward.

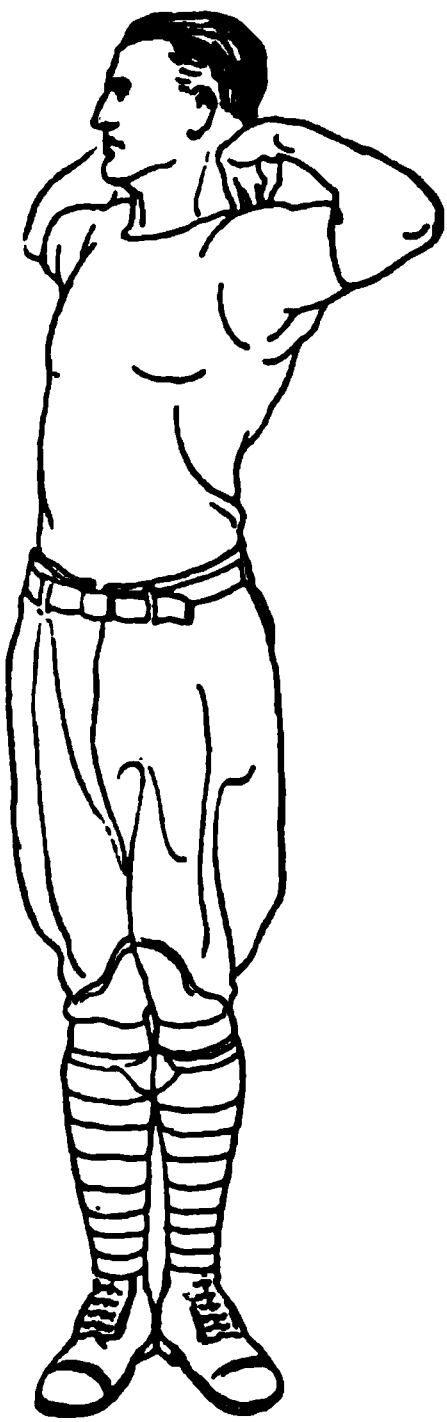


PLATE 95.
Twist Trunk Side-ward.

(3) 1. *Hands on shoulders*, 2. PLACE, 3. *Twist trunk sideward, right or left, two counts*, 4. EXERCISE. Repeat 6 to 8 times. (Plate 95.)

The trunk is turned to the right or left as far as possible; shoulders square and head erect; knees extended and feet firm; execute slowly; inhale on first and exhale on second count.

(4) 1. *Arms to the thrust*, 2. RAISE, 3. *Turn head right (left), two counts*, 4. EXERCISE. Repeat 6 to 10 times. (Plate 96.)

The head, chin square, is turned to the right or left as far as possible, muscles of the neck being stretched; shoulders remain square; execute slowly; breathe naturally.

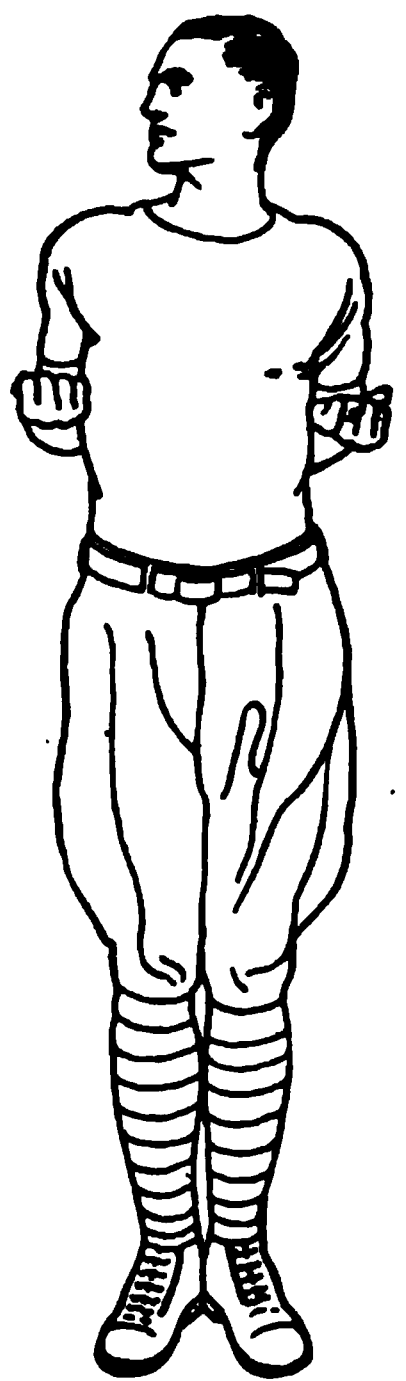


PLATE 96.
Turn Head Right (or Left).

(5) 1. *Hands on hips*, 2. PLACE, 3. *Raise knee, two counts*, 4. EXERCISE. Repeat 10 to 12 times. (Plate 97.)

The thigh and knee are flexed until they are at right angles, thigh horizontal; toes depressed, the right knee is raised at ONE and the left at Two; trunk and head erect; execute in the cadence of quick time, breathe naturally.

(6) 1. *Fingers in rear of head*, 2. LACE, 3. *Full bend trunk forward, two counts*, 4. EXERCISE. Repeat 6 to 8 times. (Plate 98.)

The trunk is bent forward as far as possible; knees extended; feet firm, head and shoulders fixed; execute slowly; exhale on first and inhale on second count.

(7) 1. *Hands on hips*, 2. PLACE, 3. *On toes*, 4. RAISE, 5. *Hop two counts*, 6. EXERCISE. Repeat 12 to 16 times.

The body is raised on the toes and hopping is performed with knees extended; execute fast; breathe naturally.

(8) Breathing exercise as in First Series.

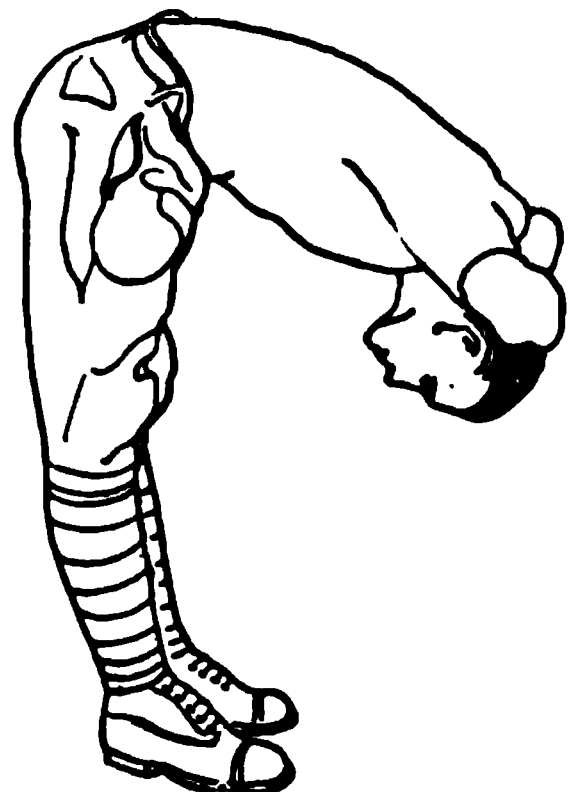


PLATE 98.
Full Bend Trunk Forward.

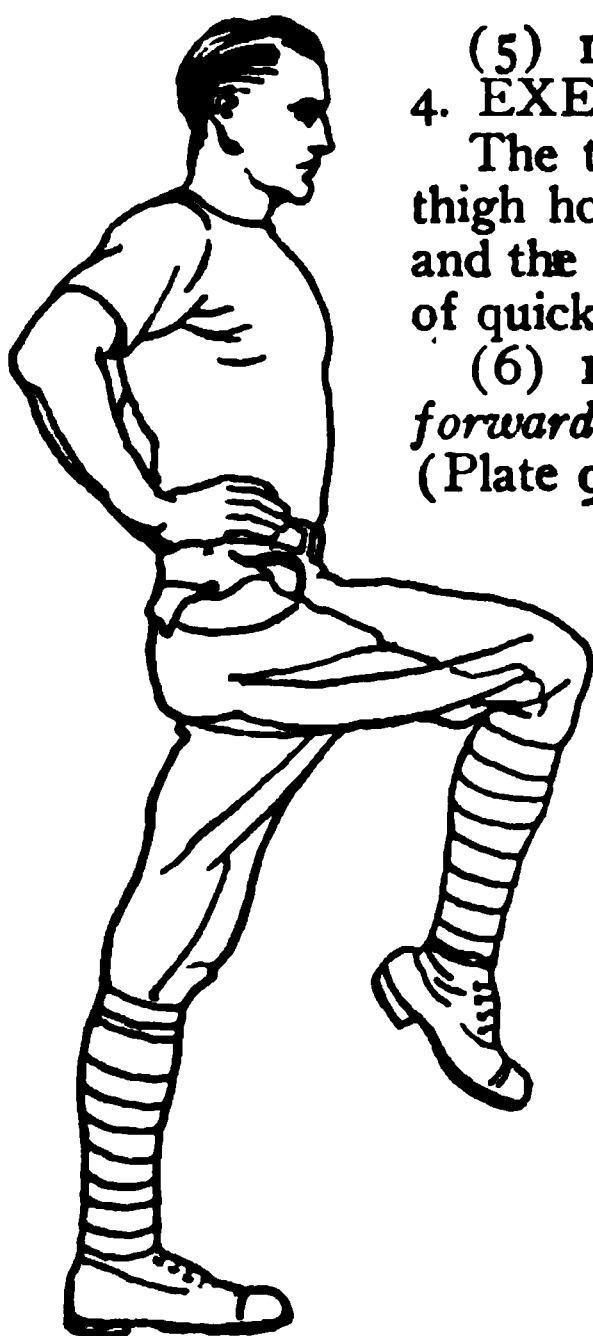


PLATE 97.
Raise Knee.

Fifth Series.

(1) Repeat Fourth Series, doing each exercise only a few times.

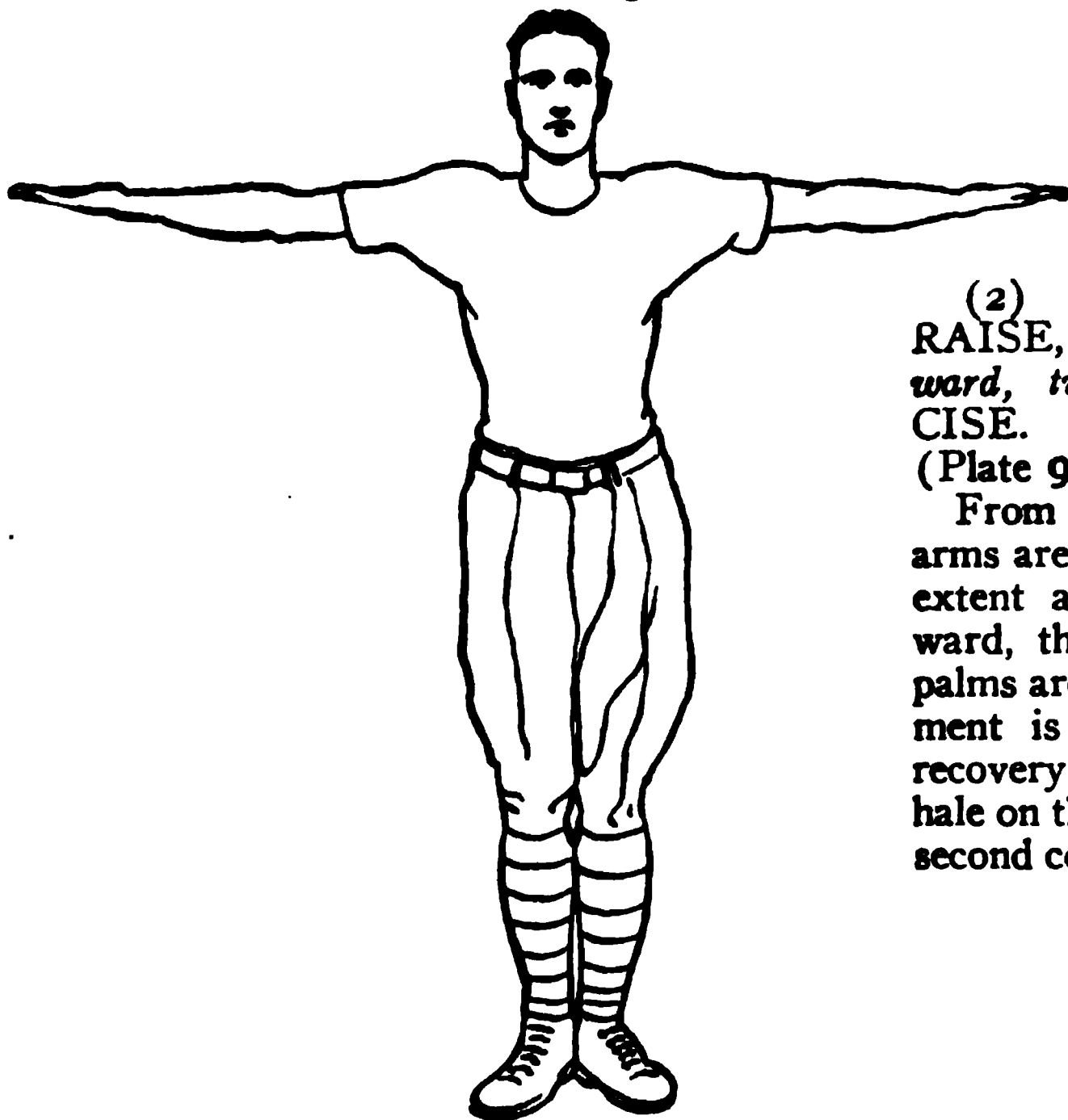


PLATE 99.
Stretch Arms Sideward.

(2) 1. Arms forward, 2. RAISE, 3. Stretch arms side-ward, two counts, 4. EXERCISE. Repeat 6 to 8 times. (Plate 99.)

From the front horizontal the arms are extended to their fullest extent and then stretched side-ward, the arms rotating till the palms are up; the sideward movement is performed slowly; the recovery relaxed and quick; inhale on the first and exhale on the second count.

(3) 1. Hands on hips, 2. PLACE, 3. Bend trunk obliquely forward, right (left), two counts, 4. EXERCISE. Repeat 4 to 8 times. (Plate 100.)

The trunk is turned to the right and bent forward to the half-bend position; shoulders remain square, in the plane of the ground; head fixed; knees straight; feet firm; hips as nearly perpendicular as possible; execute slowly; exhale on first and inhale and raise chest on the second count.



PLATE 100.
Bend Trunk Obliquely Forward.

1. *Arms to the thrust*, 2. RAISE, 3. *and leg forward, two counts*, 4. EXERCISE. Repeat 8 to 10 times. (Plate

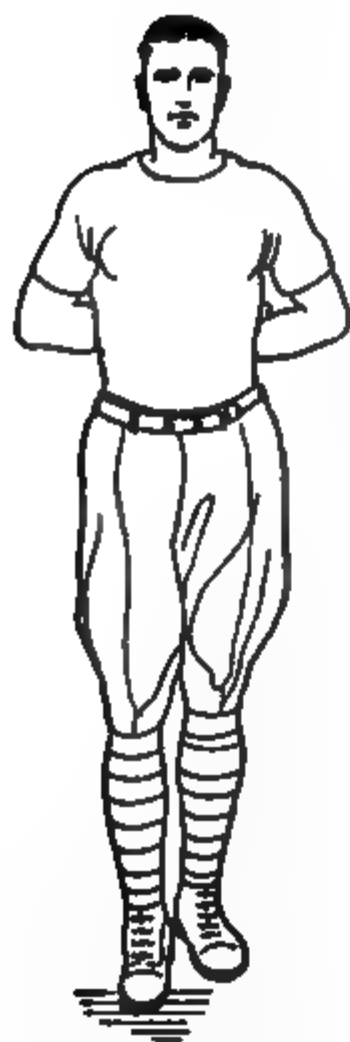
nee and ankle are extended forward snap, the toes just escaping the all extensor muscles contracted; in leg relax; trunk and head erect; exactly; breathe naturally.

1. *Hands on shoulders*, 2. PLACE, 3. *elbows forward, two counts*, 4. EXERCISE. Repeat 8 to 10 times. (Plate

elbows are brought together horizontally in front and then forced back as far as possible; the forward movement is reversed backward is a stretch not a jerk; moderately fast; exhale on first and inhale on the second count.

PLATE 101.
Extend Leg Forward.

PLATE 102.
Move Elbows
Forward.



(6) 1. *Hands on hips*, 2. PLACE, 3. *Bend trunk forward and backward, two counts*, 4. EXERCISE. Repeat 6 to 8 times.

Bend the trunk forward to the half-bend position, and then backward; execute slowly; exhale on first and inhale on the second count.

(7) 1. *Arms backward*, 2. CROSS, 3. *Rise on toes, right and left alternately, four counts*, 4. EXERCISE. Repeat 10 to 12 times. (Plate 103.)

The body is extended on the toes of the right foot and then on those of the left; heels closed; trunk and head erect; execute moderately fast; breathe naturally.

(8) Breathing exercise as in the First Series.

PLATE 103.
Rise on Toes, Right
and Left Alternately.

Sixth Series.

(1) Repeat Fifth Series, doing each exercise only a few times.

(2) 1. *Arms forward overhead*, 2. RAISE, 3. *Swing arms downward and upward, two counts*, 4. EXERCISE. Repeat 8 to 10 times. (Plate 104.)

(3) 1. *Arms sideward overhead*, 2. RAISE, 3. *Fingers*, 4. LACE, 5. *Bend trunk sideward, right and left, two counts*, 6. EXERCISE. Repeat 6 to 8 times. (Plate 105.)

The arms are fully extended and the body, stretched at the waist, is bent sideward to the right and left; knees straight; feet firm; head erect; execute slowly; breathe naturally.

PLATE 104.

Swing Arms Downward and Upward.

(4) 1. *Kneel to the squatting position, hand on hips*, 2. BEND, 3. *Rock on knees, two counts*, 4. EXERCISE. Repeat 6 to 8 times.

The knees are bent as in Plate 93; extend and bend the knees in quick succession; trunk and head erect; heels closed; execute moderately fast; breathe naturally.

PLATE 105.

Bend Trunk Sideward,
Right and Left.

(5) 1. *Arms to the thrust*, 2. RAISE, 3. *Move shoulders forward, up, back, and down, four counts*, 4. EXERCISE. Repeat 8 to 10 times.

The shoulders are relaxed and brought forward; in that position they are raised; then they are forced back without lowering them; and then they are dropped back to position; execute slowly; exhale on first; inhale on second and third and exhale on last count.

(6) 1. *Arms to the thrust*, 2. RAISE, 3. *Thrust arms forward, swing them sideward, forward, and back to position, four counts*, 4. EXERCISE. Repeat 8 to 10 times.

The arms are thrust forward; then relaxed and swung sideward, then forward and finally brought back to position, pressing elbows well to the rear; execute moderately fast; exhale on first and third and inhale on second and fourth counts.

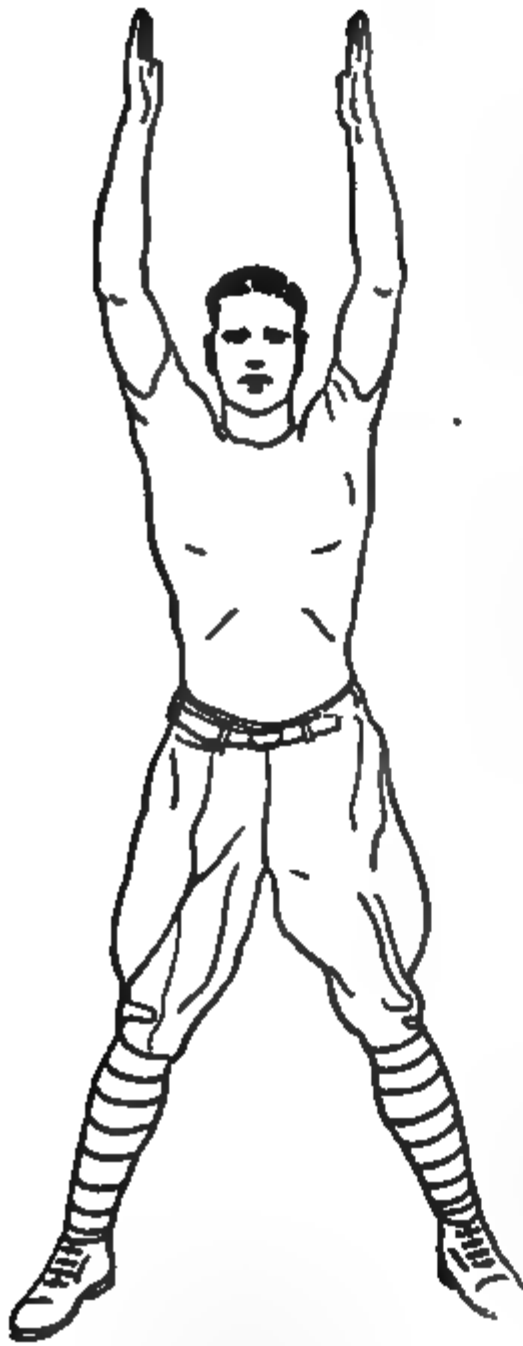


PLATE 106.
Hop to Straddle and Swing
Arms Overhead Laterally and
Recover to Position of At-
tention.

(7) 1. *Hop to side straddle and swing arms overhead laterally and recover position of attention, two counts*; 2. EXERCISE. Repeat 8 to 10 times. (Plate 106.)

The distance between the legs is about 30 inches; in alighting the toes come in contact with the ground first and the knees are bent slightly; trunk and head erect; arms extended; execute moderately fast; breathe naturally.

Additional Exercises.

We will now describe two additional exercises to give the student an idea of how they can be worked up to develop this and that muscle. The instructor must first decide upon what muscle or set of muscles require development, then what exercise will work or bring it into use and finally he must think out the necessary commands for these exercises.

The *Starting Position* is the position of ATTENTION.

For Weak Backs and Narrow Chests.

1. *Leaning rest, four counts*, 2. EXERCISE.

At count ONE, come to the position shown in Plate 107. Head up.

At count TWO, come to the position shown in Plate 108.

At count THREE, come back to the position shown in Plate 107.

At count FOUR, come to the position of ATTENTION.



PLATE 107.
Leaning Rest, Count ONE.



PLATE 108.
Leaning Rest, Count TWO.

For Weak Abdomens and General Exercise.

The starting position, 1. *Hop to side straddle position, arms horizontal*, 2. **EXERCISE.**

1. *Clasp right and left thighs, four counts*, 2. **EXERCISE.**

At count ONE, come to the position shown in Plate 109. Right knee bent, left knee straight, chin close to knee.

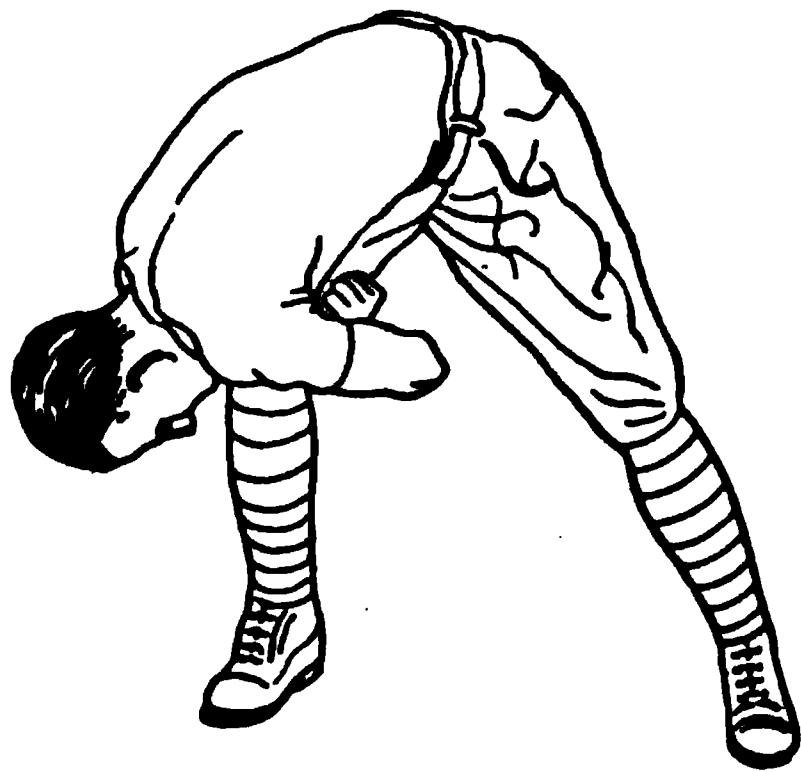


PLATE 109.
Clasp Right and Left Thighs.

At count Two, come back to the *Starting Position*.

At count THREE, clasp the left thigh, exactly in the same manner as you clasped the right thigh. (Left knee is now bent, and the right knee is straight.)

At count FOUR, come back to the *Starting Position*.

Don't look down at the ground or your feet when you come back to the position of attention. Don't let the arms become flabby. Keep them straight when they are raised sideward.

After the exercise has been continued several times and the command HALT has been given bring the students back to ATTENTION by giving the commands:

1. *To position of attention*, 2. HOP.

Advanced Work for Eager and Alert Students.

If you have mastered this chapter, you should be prepared to introduce a great variety of other exercises. This requires, as in anything else, energy and imagination.

See if you can introduce some new, sound, and profitable exercises to the present list.

Work out first a good command for the exercise shown in Plate 110.

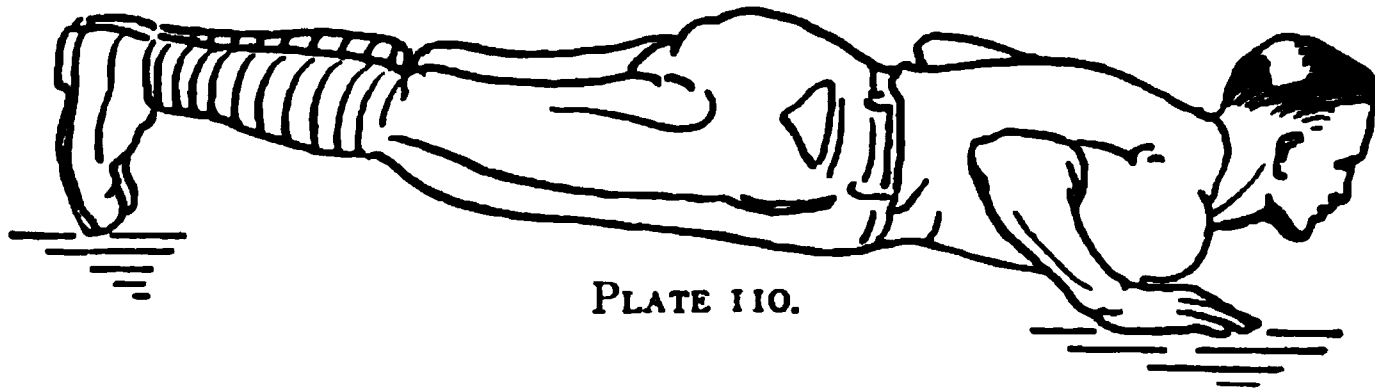


PLATE 110.

Next being in an appropriate *Starting Position*, give proper commands and explain a common-sense method of executing some head exercises. For instance: Turn head to right and left; bend head to front and rear; bend head to right and left. We are trying to get you away from stereotype drills. Do some original work. But let this be based on study and sweat—not caprice.

Now go to the shoulders. For instance, roll shoulders forward, then back. Raise right and left shoulders, etc. Don't let down on the tone and common sense of the work, however.

Next go to the waist. For instance, give bend trunk to front and rear. Circle trunk to right. Bend down and touch toes, etc.

Now go to the legs. For instance, raise legs alternately. Try it at double time.

There is no end to these good, healthy exercises. However, you should practice them before you preach them. Don't experiment on others until you have experimented on yourself.

HINTS TO INSTRUCTORS.

Whenever possible an officer should conduct the physical work personally, as in no profession does the individuality and personal influence of a leader carry such weight as it does in the military.

Instructors should not fail to do as much as possible themselves, as an example is always more impressive than a precept; it will also serve to keep the officer in fit condition.

The work laid out in this text should not be followed blindly; every instructor should select such portions, and if necessary vary them, as in his opinion are productive of the best results under the conditions under which he is laboring.

Insist upon accurate and precise execution of every movement. By doing so those other essential qualities, beside strength and endurance—activity, agility, gracefulness, and accuracy—will also be developed.

Exercises which require activity and agility, rather than those that require strength only, should be selected.

It should be constantly borne in mind that these exercises are the means and not the end; and if there be a doubt in the mind of the instructor as to the effect of an exercise, it is always well to err upon the side of safety. Underdoing is rectifiable; overdoing is often not.

The drill should be made attractive, and this can best be accomplished by employing the mind as well as the body. The movements should be as varied as possible, thus constantly offering the men something new to make them keep their minds on their work. A movement many times repeated presents no attraction and is executed in a purely mechanical manner which should always be discountenanced.

Short and frequent drills should be given in preference to long ones, which are liable to exhaust all concerned, and exhaustion means lack of interest and benefit. All movements should be carefully explained and, if necessary, illustrated by the instructor.

Everything in connection with physical training should be such that the men look forward to it with pleasure, not with dread, for the mind exerts more influence over the human body than all the gymnastic paraphernalia that was ever invented.

Never exercise the men to the point of exhaustion. If there is evidence of panting, faintness, fatigue or pain, the exercise should be stopped at once, for it is nature's way of saying "too much."

By constant practice the men should learn to breathe slowly through the nostrils during all exercises, especially while running.

A fundamental condition of exercise is unimpeded respiration. Proper breathing should always be insisted upon; "holding the breath" and breathing only when it can no longer be held is injurious. Every exercise should be accompanied by an unimpeded and if possible by an uninterrupted act of respiration, the inspiration and respiration of which depends to a great extent upon the nature of the exercise. Inhalation should always accompany that part of an exercise which tends to elevate and distend the thorax—as raising arms over head laterally, for instance, while that part of an exercise which exerts a pressure against the walls of the chest should be accompanied by exhalation, as for example, lowering arms laterally from shoulders or overhead.

Never exercise immediately after a meal; digestion is more important at this time than extraneous exercise.

Never eat or drink immediately after exercise; allow the body to recover its normal condition first, and the most beneficial results will follow. If necessary, pure water, not too cold, may be taken in small quantities, but the exercise should be continued, especially if in a state of perspiration.

Never, if at all possible, allow the underclothing to dry on the body. Muscular action produces an unusual amount of bodily heat; this should be lost gradually, otherwise the body will be chilled; hence, after exercise, never remove clothing to cool off, but, on the contrary wear some wrap in addition.

MASS ATHLETICS AND GROUP GAMES.

1. The following general remarks upon the organization and conduct of group games and the accompanying descriptions of some selected games are furnished with the hope that they will prove useful in connection with the progress of physical training.

2. Group games afford a means for giving physical exercise in an interesting form to large numbers at the same time.

When properly conducted they have great value in the development of alertness, initiative and the spirit of fair play.

Group Games.

3. Group games require a simple form of organization. The playing signal is usually given by some man in the group. In this type of training the individual is the unit and if he fails to do his part well, he alone suffers. The events enumerated require that each man be attentive and more or less alert; that he play his part in the game when called upon to do so. The character of the order and of execution in group games as compared with those in the setting-up drill are radically different. The following games have been chosen out of hundreds that have been tried out in the army and are suggested because they not only have been popular, but likewise because of their educational value.

4. The leader can start any of the games and with a reasonable injection of enthusiasm feel confident of its success. Many of the games are variable. The instructor in charge should seek to make these changes, thereby keeping up the interest and enthusiasm.

5. In teaching the games, those that are not continuous should be played two or three times. Generally a game has to be played through at least once to get a real conception of it. Games that are continuous, such as tag, circle, and ball games should not be continued too long. The director should stop all games before the interest begins to wane.

6. Physical training officers must remember that supervised play may degenerate into work. Forty-five minutes a day should be the maximum—thirty minutes is ideal. The most satisfactory time in the day for games is the last hour in the afternoon or the last hour in the morning. The men can go directly to the bath house from either of these formations, a most desirable close to such activities.

7. Group games may be taught, using the whole company or a platoon as a base. The modern war strength company, is almost too large, however, to be handled as a unit. Counting out absentees, a platoon usually has about 45 or 50 men. Divide this group into three teams and results will be better than any other division. Six or eight or even twelve and sixteen teams of twenty to thirty men each, however, can be handled by a good director.

8. In promoting the games, the instructor should put a non-commissioned officer in charge of each team to act as captain. The captains act as coaches and are responsible for fair play of their team. These captains should not play, but coach to stimulate enthusiasm.

9. Generally speaking, twenty men to a team or, if a purely group game, twenty men to a group is the unit in numbers that will give the most satisfactory results. Any number from eight to thirty men may be used to good advantage, the large number in preference to the smaller. Several of the games may be played very successfully with as many as forty or fifty participating as a unit.

10. Where there are two or more groups playing, the most practicable way of teaching the various games is to arrange them in the formation needed to play the game and then demonstrate fully with one of the central groups so that all of the

men as well as the group coaches can see. After one game has been played out, to teach another, reform the men, if a new formation is necessary, and demonstrate with one of the central groups as before.

1. Hints to Student Instructors.

- a.* Insist on fair play (enforce the rules).
- b.* Put pep into the game.
- c.* Keep the game going—there is no “Rest.”
- d.* Do not let any man drop out without permission.
- e.* Make all non-commissioned officers as well as privates participate.
- f.* In starting a new game, be clear, talk little; demonstrate.
- g.* Develop the spirit of play.
- h.* To get the best results there must be discipline and good order.
- i.* Do not let a game drag out. Stop it while the men still want more.
- j.* Don't forget that most games may be modified to meet equipment at hand.
- k.* Especially encourage losers; winners do not need encouragement.
- l.* Soccer footballs, basket balls, or volley balls may be used in place of medicine balls in most instances.
- m.* Men finishing a relay race or falling out of an elimination contest fall out and reform in some formation (keep order).
- n.* In all tag games the playing area should be limited to about one hundred (100) feet square, or less, varying with the size of the group.

2. Tag Games.

a. Formation: Players scattered promiscuously on play area. Team Tag: At signal, the player who is “IT” chases runners. When “IT” tags a runner the latter joins hands with him and the pair chase the runners. Runners tagged join either end of the line. Only players on the end of the line can tag. Game continues until all are tagged. Players running out of bounds join the “IT” line.

b. Hook Arm Tag: Group forms in single circle facing in. Players are paired, inside arms hooked at elbows, outside hands on hips. Two men in center, one is “IT.” The other is being chased by “IT.” The chased man runs about circle either inside or out, and may hook the elbow of any player. The player he catches holds fast to him and the third party is then chased. If “IT” tags man chased he then becomes the chased one and the one tagged becomes “IT” and game continues.

c. Fence Tag: Played only where there is a fence, trench, narrow creek or something that may serve as a good dividing line. Played as tag except that man tagged and “IT” have to be on the same side of fence, creek or trench at the time of tagging.

d. Three Deep: Group forms in double circle facing in; the outside circle covering off the inside circle. Each pair should be six feet apart. One man is “IT.” “IT” chases another man who may jump in front of any one of the men in the inside circle. He is then safe. The player in the rear of the one he jumped in front of is then the third party and “IT” must chase him. The player being chased and “IT” must keep on the outside of the circle except when jumping in front of player in inside circle. Player when tagged becomes “IT” and must chase the one who tagged him.

e. Heads and Tails: Formation—two lines back to back. One line named Heads and the other Tails. Leader tosses coin into the air and calls it as it falls “Heads” or “Tails.” If Heads comes up or is called all Heads run to safety point, which should be about thirty feet away. The Tails attempt to catch them before they reach the safety point. Players caught join the team catching them. Team having the largest number of players at end of game wins.

f. Red Ace: Played by any number of players from ten to a battalion. Playing space between two parallel lines about twenty-five yards distant. Red Ace or “IT” takes position in center of playing square. At signal all players rush across and

Red Ace or "IT" attempts to take or hold as many players as possible before they have crossed line. Players caught become "Red Aces" or "Its" and join the original player. Continue until all are caught.

g. Nest Tag: Group forms in double circle; outside circle facing in; inside circle facing out, covering off outside circle. Playing opposite each other hold hands forming a basket. One man is "IT." He chases another man who may duck under the arms of any pair of men about the circle. The Player being chased may face either man upon raising between the arms. The player at his back releases hands and becomes the party chased. The man in front takes the hands of the new man forming the basket. If the chased man is tagged he becomes "IT" and chases the other man.

h. Mount Tag: (Playing area 100 ft. sq.) Played as ordinary tag except a man is immune to tagging if he is mounted on some other player. Player holding another mounted man is also free from tagging. More than one may mount the same man.

3. Elimination Games.

a. Circle Tag: Draw a circle about four feet in diameter on the ground. Players form a ring about circle with arms about shoulders facing in. At signal the players attempt to draw other players into circle. Any player who steps into circle withdraws from game. Game continues until only one man is left.

b. Jumping Circle: Group forms in circle about twenty feet in diameter. One player stands in center holding a light rope about fifteen feet long with a soft weight on one end. Player in center swings rope around so that players in circle have to jump it. Players who fail to jump drop out of circle. Continue elimination until entire group is put out. The last man out is the winner.

c. Rooster Fight: Two teams form lines facing each other at distance of fifteen feet. Each player grasps either of his own feet with both hands behind the back. At signal team hops forward. The object is to upset the players of the opposing team or to cause them to let go their feet. Players knocked to the ground or forced to release upheld feet must drop out. Hands must not be used. Players knock opponents down indiscriminately. The team putting all its opponents out wins.

d. Circle Race: The players should be distributed around a track equal distance apart (ten to thirty feet varying with the numbers). At signal each player runs forward. Any player catching and tagging runner puts the tagged runner out of the race. The tagger runs forward to tag the man next to his front. Race continues until all are out but one.

e. Follow the Leader: Form the group in a column of files. Place someone who is more or less athletic in the lead. He starts off at a dog trot, the men following. The leader undertakes any responsible hazard that he can find, such as jumping ditches, vaulting fences, clambering over tree limbs, etc. Men who fail to do anything that the leader sets drops out. If the leader fails on anything he attempts he is forced to withdraw. Only one attempt is allowed at a hazard. Game continues until all are out but one. The instructor should change leaders occasionally.

f. Medicine Ball Cap Throw: Two ropes are placed parallel about twenty feet apart. Men are arranged in column leading to one rope. First player hurls ball across intervening gap. (Director should indicate the style of throw at the beginning of the contest. All must throw alike.) The other players follow until all have thrown. Gap is widened. Players throw again, players failing to make a successful throw are eliminated. Elimination is continued until winner is decided. Only one throw allowed at each distance.

4. Circle Games.

a. Bull in the Ring: Group forms in a circle holding hands. One man who is termed the "Bull" is placed in the center. If there are over twenty men in the ring have two "Bulls." The "Bull" tries to break out by charging the ring so the

clasped hands are forced apart. If the "Bull" gets out the players try to catch him. Players successful in catching the "Bull" become "Bull" for the next game.

b. Cat and Mouse: Players form in ring holding hands. "It" or the "Cat" is inside and the "mouse" is outside the circle. At signal "It" attempts to tag the "mouse." If he does the player in the circle nearest the point of tagging becomes the "mouse" and the old "mouse" becomes "It." The men in the circle should attempt to prevent "It" from getting to outside of circle to tag the mouse. If he does break through let the mouse in and keep the cat out. Cat and mouse should be replaced by players from the circle frequently.

c. Swat to Right: Group forms in circle, standing shoulder to shoulder, hands behind back, facing in. One man carrying swatter, runs around outside of circle and places the swatter in someones hand. The man receiving it immediately hits the man on his right. The man who is hit runs around the circle until he is back to his starting position. The player with the swatter follows runner and swats him until he is in position. The player with the swatter then runs on and places the swatter in some other player's hand.

d. Milling the Man: Groups of about fifteen men form small circle sitting close together facing in. One man is "It" in circle. With arms to side he stiffens his body and simulates a dead man falling; men in circle prevent his falling to ground, pushing him back and forth. If he falls, the man responsible becomes "It." Body must be kept rigid to get best results.

e. Six-day Bicycle Race: Stake off field at four corners so that running about stakes would represent a team. Players line up across track after drawing for places. At signal, one player mounts hips of other player who runs forward around track. After start, players may exchange places at will, and as often as they like. Race may be made two laps, three laps, four laps or more in length, depending on the distance around the track. Two hundred yards represents a good race.

5. Ball Games.

a. Number Ball: (Playing area 40 ft. square.) Each player is given a number. When a player's number is called all others run away and he attempts to hit someone with the ball from where he stands. Player hit gets one "hit." The ball is then replaced in the center and man whose number was called last calls next number. A player getting three "hits" has to crawl through the legs of the team lined up, and gets paddled. Penalty for stepping out of area-line "hit."

b. Mounted Ball: Group forms in double circle, facing in; players of inside circle four feet apart, outside circle covering off inside circle. Outside circle are "Riders," inside circle are "Horses." Riders mount on hips of horses. Horses must hold riders firmly. Riders pass medicine ball about. Horses endeavor to make riders drop ball. Horses must stay in place (shaking, sidestepping, wriggling, etc., are methods which may be used to make riders drop ball). Horses become riders and riders become horses whenever the riders drop the ball. Entire team changes, not single players.

c. Ball Tag: Group forms in a single circle facing in, players four feet apart. If less than sixteen players, one man is "It" in center. If more than sixteen, two men in center. Players in the circle pass a medicine ball about. "It" tries to touch the ball; if he does the player in the circle responsible for his touching it changes place with him and becomes "It."

d. Dodge Ball: One team is formed in a circle, facing in, players four feet apart. Other team gathers inside the circle. Team forming the circle has medicine balls (all that are available) and attempts to hit players of team inside. The players hit drop out. The time it takes to force the entire center team out is recorded. The teams then exchange places and repeat, taking time again. The team taking shortest time to put opponent's team out wins.

6. Miscellaneous Games.

a. Stake Snatch: Choose two teams having an equal number of men on each. Draw two parallel lines about thirty feet apart. One team takes one end the other team the remaining end. Place a box, or small chair in the middle of the area—midway between the two teams and place a handkerchief on the box or chair. A bayonet may be used, stuck in the ground and the handkerchief placed over it. At the word “go” the man on the right end of each team starts out toward the handkerchief on the run and each man attempts to grab the handkerchief and return across his line before being tagged by the other player. If he is successful the other player joins his team. If he is tagged he must join the taggers team. The team getting all the men or having the most men on its side at the end of the period wins.

b. Pass the Buck: Formation—two lines of players facing one another. Pair off and join hands—holding the hands about waist high. The players start from one end and are passed along the arms to the other end where a player should be placed as end man. This end man turns the players heels over head off the arms as they reach the end of the line. Continue until all have participated.

CHAPTER III.

RIFLE MARKSMANSHIP.

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RIFLE MARKSMANSHIP. DEFINITIONS.

These definitions are not to be studied. They are inserted here to give the student access to an easy reference.

Aiming device: A device to be attached to the rifle by which the instructor, at one side and facing the rear sight on the rifle when the soldier is in the act of aiming, can see the reflection of both sights and the object aimed at, and can therefore judge of the accuracy of the soldier's aim and the steadiness of his trigger squeeze.

Anemometer: An instrument for measuring the velocity of the wind.

Bore: The cylindrical cavity in the small-arms barrel.

Butt: The embankment or other means used to stop bullets in rear of the target. The plural "butts" is used to designate collectively the parapet, pit, and back stop of a group of targets.

Caliber: The interior diameter of the small-arms barrel measured between the lands.

Cant: To revolve the barrel of the piece on its axis to the right or left while aiming.

Center: The annular division of the bull's-eye targets A, B, and C embraced between the bull's-eye and the circumference of the next larger circular division of the target. Shots in this space have a value of 4.

Classification: The arranging of the individuals of an organization in groups or classes according to the degree of skill displayed in record practice on the range with the rifle or pistol.

Close range: Any distance under 100 yards.

Coach: A special instructor charged with the duty of giving advice and information to the firer.

Creep: Any movement of the trigger that can be felt by the finger after the slack has been taken up and before enough pressure is applied to fire the rifle.

Danger space: The sum of the distances in the path of the bullet in which an object of given height will be struck. At long ranges the danger space at the farther end of the range alone is considered.

Defilade: An obstacle either natural or artificial of sufficient thickness to intercept projectiles and afford shelter from fire delivered from a given point.

Disappearing target: A target which is temporarily exposed to view.

Disk, marking: A staff, with a disk at each end, used by the marker in the pit in signaling the results of hits on the target.

Distinguished marksman: An officer or enlisted man who has won three of the authorized medals in department, departmental, corps area, division, and Army rifle or carbine competitions or as a member actually firing on a prize-winning team in the national team match.

Drift: The lateral deviation of the bullet caused by the resistance of the air and the rotation of the bullet on its longer axis.

Echelon, order in: In the order in echelon the targets or firing stands are placed one behind another to the right or left and unmasking one another.

Emplacement: The space on the target range allotted for the position of the target.

Expert rifleman: The highest grade or classification for skill displayed in record practice on the range with the rifle.

Gallery practice: Firing at reduced targets at short ranges with cartridges that have a reduced load, or with small-caliber rifles.

Gallery, shooting: A room or inclosure in which gallery practice can be conducted.

Grooves: The spiral channels within the bore of the rifle barrel.

Individual practice: The firing on the range by which the individual soldier receives his instruction and by which his classification is determined.

Insignia: Badges or distinguishing marks issued for expertness with the rifle or pistol.

Instruction practice: The prescribed firing on the range which precedes record practice and which is devoted to the instruction of the soldier.

Lands: Spaces in the bore of the rifle barrel between the grooves.

Line of aim: The imaginary right line joining the middle point of the horizontal line of the open sight, or the center of the peep sight, and the point of aim.

Long range: Any range over 600 yards.

Marksman: A grade of rifleman just below that of sharpshooter.

Midrange: 500 and 600 yards.

Mirage: A word used to designate the heat waves observed on the target range on warm days. The waves indicate the direction in which the air is moving.

O'clock: A term employed to indicate, by means of the divisions on the dial of the clock, the location of a hit on the target or the direction from which the wind may be blowing, as a 7:00 o'clock, 4:00, or 5:00 o'clock wind. In speaking of the position of a hit, the dial is supposed to occupy the front of the target facing the firer, with 12 at the top of the target. In speaking of the wind, the dial is supposed to lie on the ground, with the 12 toward the target and the center at the firing point.

Parapet: An elevation of earth or other material thrown up in front of the targets to protect the markers.

Pasters: Small pieces of paper used to paste up the shot holes in the target.

Pit: The space between the parapet and the butt or bullet stop occupied by the markers.

Practice dummy cartridges: Cartridges not containing powder and of such a shape and color as to be readily distinguishable from loaded cartridges. Practice dummy cartridge are used in instruction in loading and in preparatory rapid-fire exercises.

Practice season: Those portions of the target year devoted to firing with the service cartridge. They include the regular season and the supplementary season.

Preliminary firing: The prescribed firing on the range which precedes competitions.

Preparatory exercises: Consist of sighting exercises, position exercises, trigger-squeeze exercises, rapid-fire exercises, and sight-setting and sight-changing exercises, designed to teach the soldier the essentials of rifle firing in preparation for range practice.

Prone: Lying flat on the belly. The only position with body extended on the ground authorized in known-distance firing.

Protest: A formal objection against some act or decision.

Qualification: The grade attained in known-distance practice depending upon the scores made by individuals in record practice.

Range: Any tract of land over which firing with small arms is conducted. This term is also used to signify the distance of the objective from the firer.

Range dummy cartridges: Cartridges not containing powder but so made as not to be distinguishable from loaded cartridges when placed in a clip. Range dummy cartridges are used in rapid-fire instruction on the rifle range. Their use is prohibited except on the firing point of the rifle range.

Range officer: A commissioned officer charged with the care, police, etc., of a target range and its accessories.

Rapid fire: The class of fire employed in instruction and record practice in which a time limit is set for completing a score.

Regular season: Comprises six weeks of the target year, designated by the department or corps area commander, in which the prescribed course of known-distance firing is pursued.

Ricochet shot: A bullet which rebounds after striking the ground or other obstacle and continues its flight.

Score book: A book containing forms for recording scores and data concerning conditions affecting firing.

Score cards: Pasteboard cards upon which individual scores are kept, both in range practice and in competitions. Score cards have blank spaces for the recording of each shot and for the signature of the scorer.

Score: A string of 10 consecutive shots fired in individual practice. The term "score" is also used to express the record or register of number of points made in one or more scores, the value of sighting shots being excluded.

Sharpshooter: A grade of rifleman just below that of expert rifleman.

Short range: 100—200 and 300 yards.

Sighting shots: Trial shots which are fired at ranges of 600 yards and over to enable the firer to determine the proper sight setting.

Slack: The comparatively easy movement of the trigger to the rear when pressure is first applied.

Slow fire: The class of fire employed in instruction and record practice in which no time limit is imposed for completing a score. Firing in which one minute is allowed for each shot is also slow fire.

Spotters: Disks of thin material, 3 inches, 5 inches, and 10 inches in diameter, so arranged that they can be placed in the shot holes in the target to show the firer the exact location of his last shot. They are used in rapid fire to show the firer the exact location of all of the shots of a score.

Supplementary season: A period of the target year designated by the post commander, in which all recruits who have joined too late to participate in the regular practice season will fire a prescribed course, and in which all men below the grade of marksman may fire.

Trajectory: The path described by a bullet in the air moving under the combined influences of the force of propulsion, the force of gravity, and the resistance of the air.

Twist: The spiral formed by the grooves in the barrel of a rifled piece. In the United States magazine rifle, Model 1903, this twist is uniform, one turn in 10 inches.

Unqualified: Those who in the last practice season failed to qualify as a marksman or better and those who for any reason did not fire the course.

Windage: The amount of change made on the wind gauge to counteract the effect of wind on the bullet.

Wind gauge: A graduated attachment on the rear sight of the rifle by which allowance may be made for the effect of the wind upon the bullet.

CUT-OFF SAMPLE. CUT-OFF EJECTOR PIN. REEF AIR GAGES

RIFLE MARKSMANSHIP.

INTRODUCTION.

Object of Instruction.

Military rifle firing is composed of two parts, "Rifle Marksmanship," and "Musketry." The former teaches the individual to know and understand fully the detailed operation, functioning, care and use of his rifle. The latter, Musketry, teaches teamwork in the use and application of rifle fire. Here each man learns to coordinate his individual training with the remainder of the men in his squad, section or platoon, in order to obtain the maximum effect on an enemy.

Musketry and *rifle marksmanship* are inseparably related. Neither one alone will win battles without undue losses. In all training on the rifle range it must be constantly borne in mind that the ultimate object is the training of a team whose accurate fire can be controlled, directed and distributed in battle.

This course deals only with "Rifle Marksmanship."

The value of knowing how to shoot was proved in the last war. When the National Army was training, General Pershing cabled a number of times, "Teach the men to shoot." Later developments showed that his opinion of the value of marksmanship was fully justified. Remember always that no matter how much artillery, cavalry, engineers, air service, chemical warfare and other services an army may have, it is the infantryman, with his rifle, who must bear the brunt of the battles. He alone must be capable of covering his own advance and of holding all ground gained without undue losses. This is possible only when he is proficient in the use of his own weapon, the rifle.

It is therefore imperative that the student not only learn the use of the rifle but learn it so well that he may be able to teach others, for the students of today may tomorrow be the officers and instructors of our country.

Basis and Method and Instruction.

Shooting is a mechanical operation which anyone physically and mentally fit can learn to do well, if properly instructed. It requires no inborn talent and is, in fact, a great deal simpler than learning to run an automobile. But like any mechanical operation, it has certain well-defined steps which must be learned accurately and in proper sequence.

Steps in Instruction.

Rifle instruction is divided into two phases, "*Preparatory Instruction*," and "*Range Practice*." Practically everything to be learned is included under the first phase, (*Preparatory Instruction*) because this is the period of training during which one learns those essentials necessary to become a good shot. The second phase (*Range Practice*) is putting into effect those principles already learned.

There are five steps in the preparatory instruction. They are:

1. Sighting and aiming.
2. Positions.
3. Trigger squeeze.
4. Rapid fire.
5. Final examination.

Each step must be well understood and the work involved diligently practiced before progressing to the next. All are so correlated that they are indispensable to each other and, for that reason, should be studied progressively.

In the execution of these steps the work must be so arranged that not a minute is lost. In order to accomplish this, each step starts with a lecture; to which close attention should be given. Next the work is demonstrated; watch it closely. Then you will do the actual work, but not alone. Keep in mind at all times the fact that you will teach others the same work. To help in this, the squad is divided into four teams, each team consisting of two members. One member acts as coach while the other member goes through the work under the coaches supervision. The coach takes the same position as the student under instruction, *prone, sitting, kneeling, or standing*, so as to be able to watch his trigger finger and his eye. When the work has been completed the members exchange places and, in this manner, all not only learn the work but learn to teach others.

All persons instinctively do the wrong thing in firing the rifle, if left alone. They jerk the trigger which is the cause of flinching, they forget to hold their breath and they, without meaning to, forget to do the most essential things. Consequently no one can be taught to shoot alone either under instruction or on the range. The idea that all one needs is plenty of ammunition and a target to shoot at, and that practice ultimately makes a perfect shot is incorrect. This kind of practice merely fixes the instinctive bad habits on the average person and makes it extremely difficult for him to acquire correct habits and to learn to shoot well.

If, however, one has been carefully coached by his teammate during his instruction, his mistakes corrected, and then when he goes on the range if he is again carefully and properly coached, the correct shooting habits rapidly become fixed and replace the instinctive incorrect habits that he would have if left alone.

It is much easier to make an excellent shot out of one who has never fired a rifle, than it is to correct the errors of one who has done a good deal of shooting under improper supervision.

Study thoroughly the work outlined, understand each point perfectly and be able to explain what you have learned to some one else in your own words. Be exact, there should be no such thing as "about right," in any mechanical operation.

Habits.

Alcohol and tobacco affect the eyes and the nerves in direct proportion to the amount used. A smoker will find that he has a much clearer vision on quitting tobacco. It is best to stop its use at least one month before going on the range, but it will be a help to quit at any time during the target season.

NOMENCLATURE, FUNCTIONING AND CARE OF THE RIFLE.

In order to intelligently perform the five steps outlined for the preparatory exercises (Sighting and Aiming, Positions, Trigger Squeeze, Rapid Fire and Final Examination) it is essential that the student know the parts of his rifle and understand the functioning and care of it.

Nomenclature.

The word *nomenclature* means the vocabulary of names or technical terms, appropriate to any particular topic. In this case the topic is the rifle. It is not only unnecessary to know every part of the rifle but it is a hindrance. Learn the parts habitually referred to in rifle marksmanship and at drill, know how to take your rifle apart, to clean and assemble it and you will have sufficient knowledge to intelligently handle it.

The following plate illustrates the important parts with which you should become familiar. Learn these carefully.

The following data is of great interest and should be known by every rifleman.

The rifle now in use is the *U. S. Rifle Cal. .30, Model 1903*. Commonly known as the "*Springfield*," as it was formerly manufactured only at the Springfield Arsenal.

Weight. 8.69 pounds without the bayonet, which weighs 1 pound.

Caliber. .30 (thirty-one hundreds of an inch, interior diameter of barrel measured between the lands.)

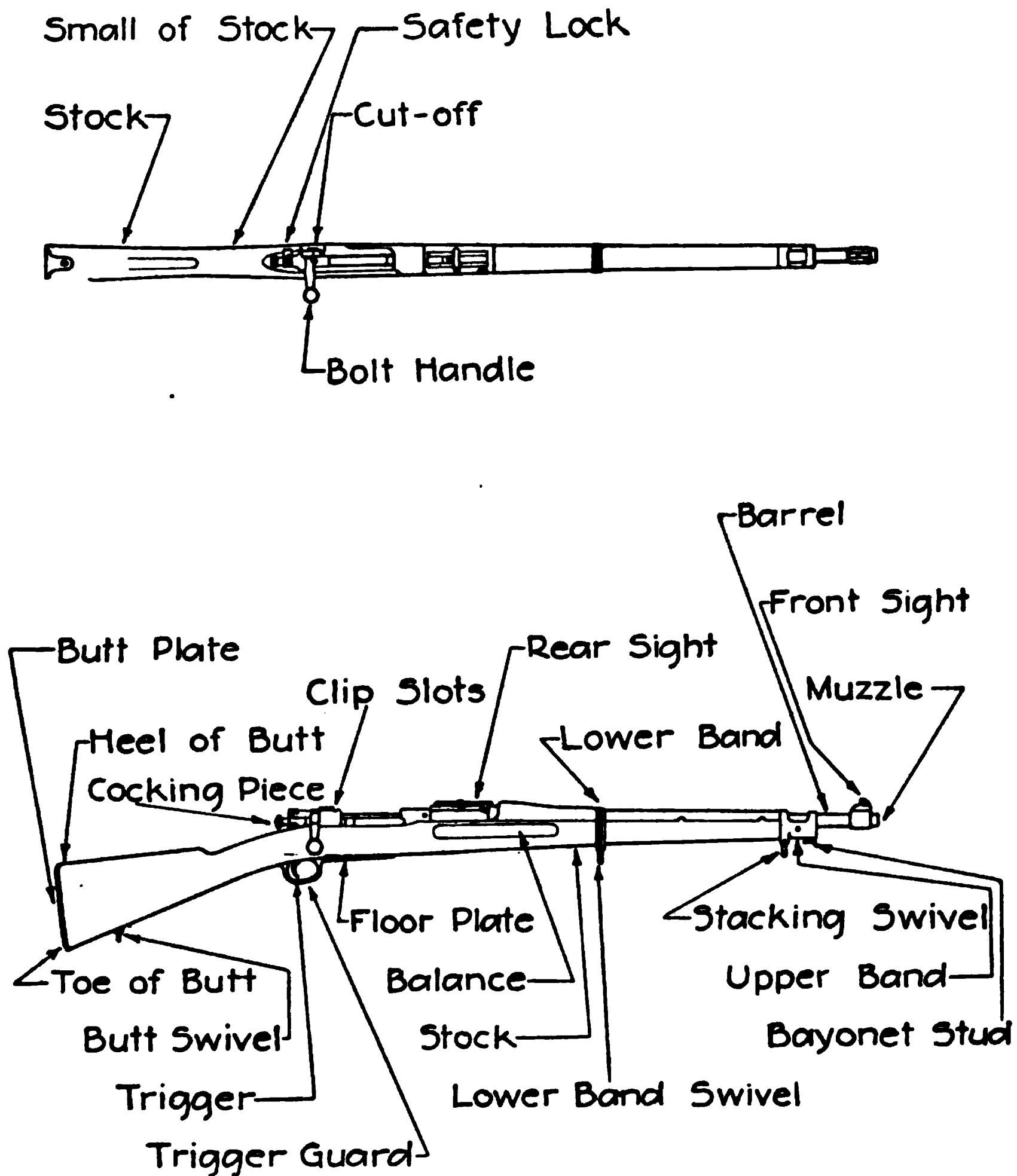


PLATE III.—Names of Important Parts of Rifle.

Lands. The four raised spaces in the bore between the grooves. (See Plate II2.)

These lands grip the bullet as it passes through the bore and rotate it to the right about the longer axis. This rotation serves to prevent tumbling (keeps the point to the front) thereby lessening resistance, affording a greater range and keeping the bullet accurately on its course. This rotation also causes the bullet to drift to the right as it passes through the air. This drift is counteracted by the rear sight, the inner side of which is cut diagonally. (See Plate II3.)

Twist. The spiral formed by the grooves in the barrel. The twist is uniform and to the right, one turn in ten inches.

Grooves. The four spiral channels between the lands. (See Plate II2.)

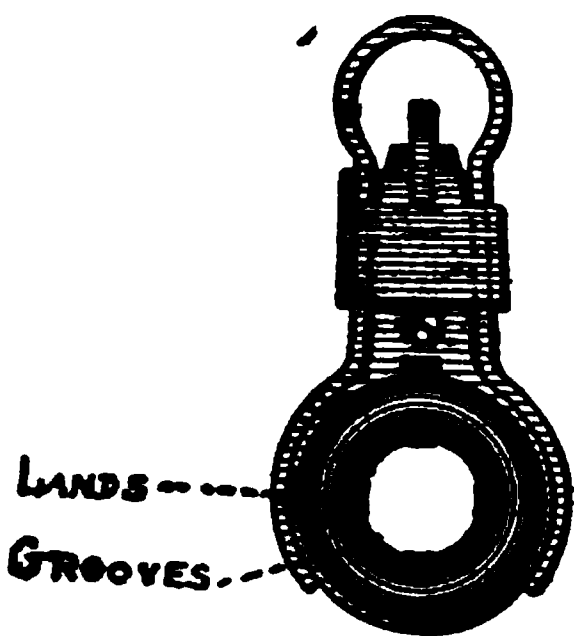


PLATE II2.

Rear sight leaf. Is graduated from 100 to 2850 yards. The range is shown by figures representing hundreds of yards. The odd range is on the right branch and the even range on the left branch. Note that the line, corresponding to the hundreds of yards, is below the figure and extends across the branch; the smaller divisions go but part way across.

The cartridge. (See Plate 114.) Consists of a brass case, a bullet which has a core of lead and tin composition, covered with a jacket of cupro nickel. This jacket is tough and enables the lands to grip and rotate the bullet while passing through the bore. A lead jacket would strip and pass through without rotating. The bullet is pointed to offer less resistance to the air.

Maximum range. 4891.6 yards (about 2½ miles) with the muzzle elevated 45 degrees.

Velocity. 2700 feet per second at 70 degrees Farenheit.

Penetration of the Bullet at 100 yards:

Seasoned Oak Lumber	31.18 inches
Loam	17.46 "
Moist Sand	14.02 "
Dry Sand	6.88 "
Brick Wall	5.5 "
Steel Plate	4 "

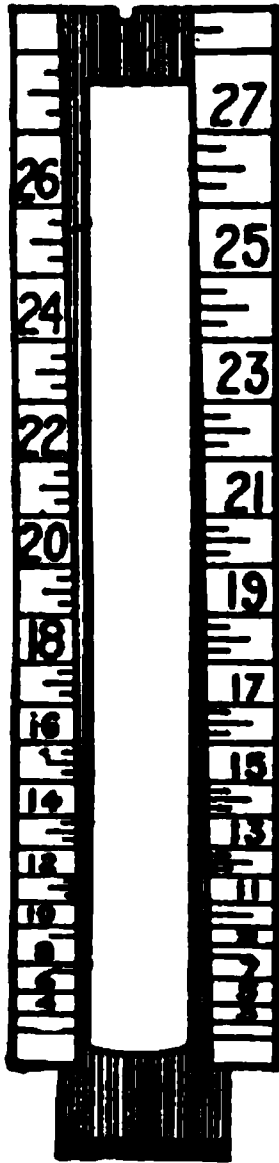


PLATE 113.

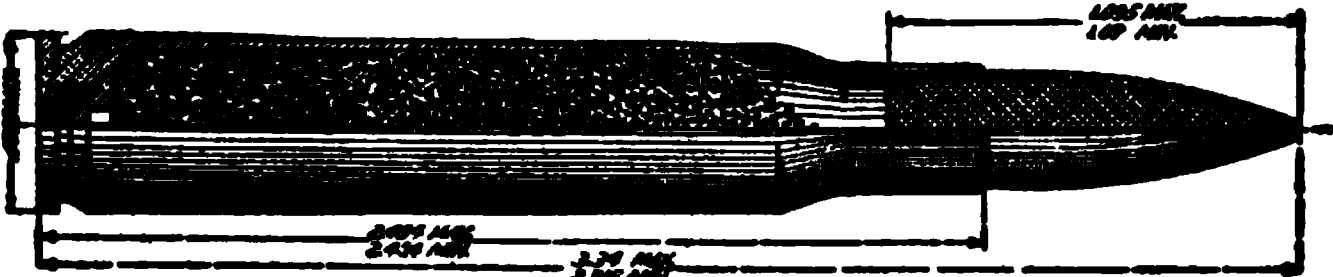


PLATE 114.—The Caliber .30 Cartridge.

Functioning.

The working mechanism of the rifle is nearly all included in the bolt and trigger mechanisms. There are, in reality, *three phases* in the functioning of these mechanisms:

- 1st. The forward movement of the bolt (*closing it*).
- 2nd. The action of the trigger and the discharge of the piece.
- 3rd. The backward movement of the bolt (*opening it*).

Inasmuch as the forward movement of the bolt is to be considered first it is necessary to know the names of its parts. (See Frontispiece.)

These three functionings are difficult, if not impossible, to understand unless studied in connection with the rifle. On the other hand they are quite easy to understand when studied in connection with the rifle.

The bolt moves and rotates in the well of the *receiver*. As it is moved forward its lower edge guides the top cartridge from the *magazine* forward until it reaches the point where the well widens. Here the *face* of the bolt engages the head of the cartridge and, helped by the *extractor*, guides it into the chamber where it is seated. The *bolt handle* is turned fully down. The *bolt* locks into its closed position by means of the *cams of the locking lugs* bearing against the locking shoulders in the receiver. Unless the bolt is fully closed the cartridge cannot be fired. The last part of the forward movement of the bolt fully compresses the *mainspring*, seats a cartridge in the chamber and forces the *hook of the extractor* into the groove of the cartridge case if not already there. Now all is ready for firing.

To fire the rifle, the trigger is squeezed, as explained later. As the *finger piece* of the trigger is drawn to the rear, the contact with the *receiver* is transferred from the *bearing* to the *heel*. This gives a movement to the trigger which is called *the*

slack. (Comparatively easy movement of the trigger to the rear when pressure is first applied). When *this slack* has been taken up, the remaining pressure withdraws the *sear nose* from in front of the *cocking piece*. The latter is shoved forward by the action of the *mainspring* which has been compressed fully by closing the bolt. The *striker* at the head of the *firing pin rod* is carried forward with it and the point emerges through the hole in the *face* of the bolt, hits the *cap* of the *cartridge*, primes it, setting fire to the powder and the resultant gases force the bullet out of the barrel. In case the explosion does not occur, wait before opening the bolt as the priming may have been delayed, causing a *hangfire*.

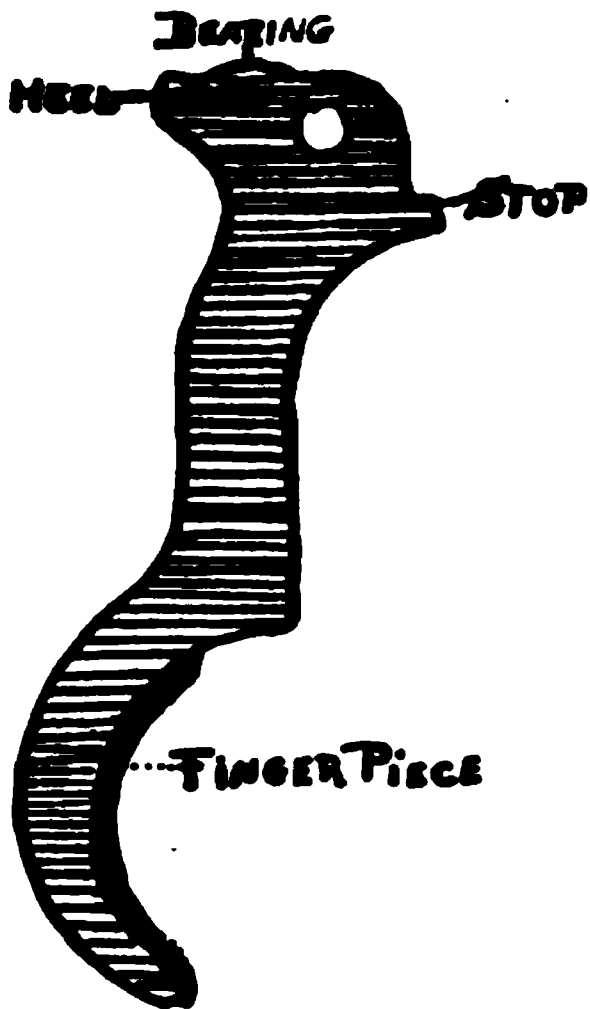


PLATE 115.—The Trigger.

To open the bolt, raise the *bolt handle* and draw the bolt directly to the rear. Raising the handle rotates the *bolt* and separates the *locking lugs* from the *locking shoulders*, with which they have been brought into close contact by the explosion. This rotation also forces the *firing pin* to the rear, starts the compression of the *mainspring*, which is increased by the completion of the rearward movement of the bolt. The completion of the rearward movement of the bolt cocks the *trigger*. (The trigger may also be cocked by leaving the bolt closed and pulling the *cocking piece* directly back.) The *extractor* still holds the empty cartridge case on the face of the

bolt and as the bolt nears the limit of its rearward movement the *ejector* strikes the empty case and this forces the empty shell off the face of the bolt and to the right, clear of the piece. This is briefly what happens each time you "shove the bolt home," pull the trigger and again open the bolt.

Care of the Rifle.

More rifles are unfitted for use through lack of proper care than through actual firing. This is carelessness, since it takes but a few minutes' time to clean the rifle and to keep it in excellent condition. This rifle is one of the finest pieces of mechan-

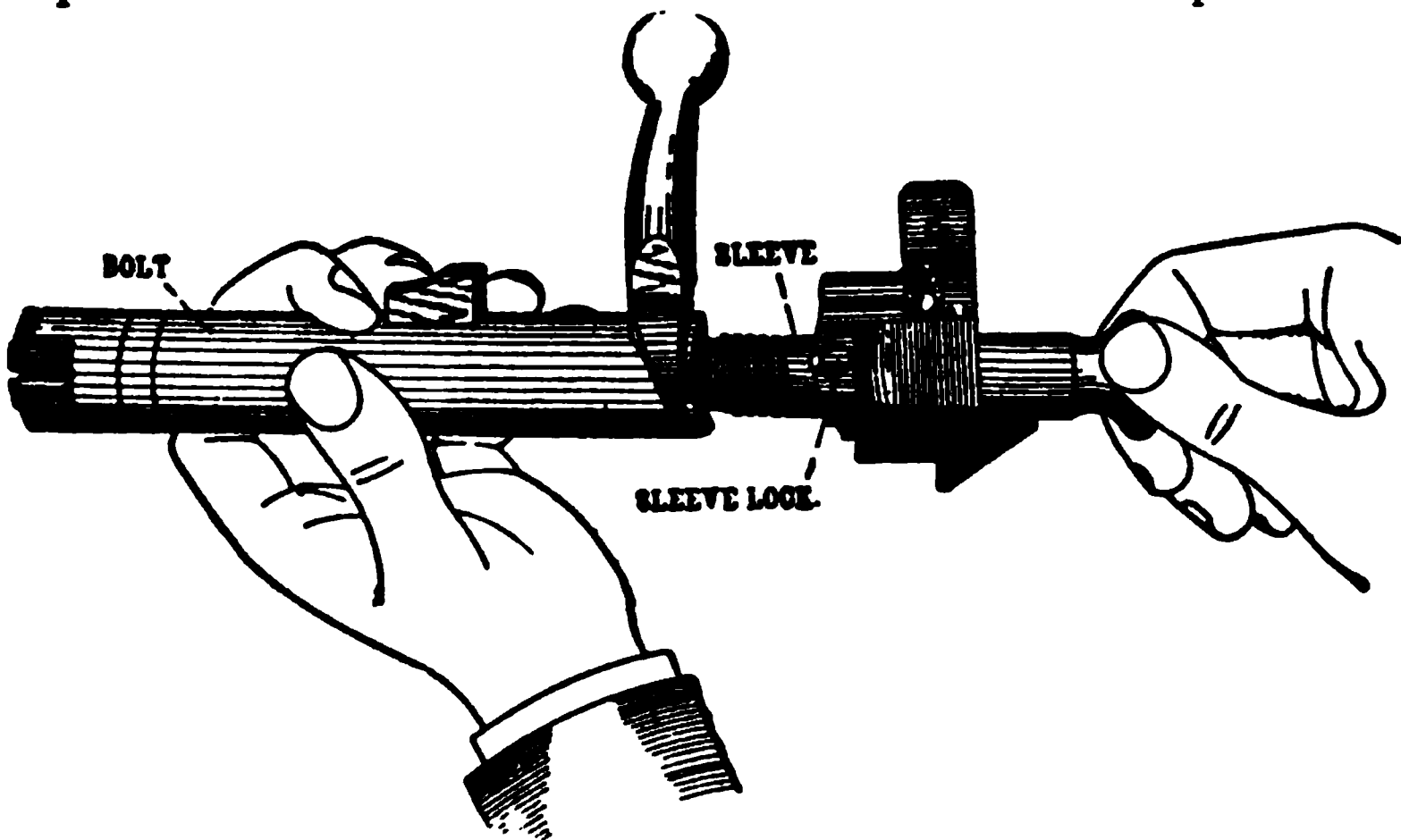


PLATE 116.—Dismounting Bolt..

ism invented, consequently it must be cared for just as any other piece of fine mechanism.

It is first necessary to be able to dismount the rifle in order to clean it. The student is allowed to dismount the following parts but this should be done the first time under the supervision of an instructor.

To dismount the bolt. First turn the cut-off (see Plate 111) to the horizontal position.

Turn the *safety lock* to the vertical position. (This can be done only when the rifle is cocked).

Pull out the *bolt*.

Hold the bolt in left hand, press *sleeve lock* with right thumb to unlock sleeve from the bolt and unscrew, by turning to the left. (See Plate 116.)

Hold *sleeve* between the forefinger and thumb of the left hand, draw *cocking piece* back with middle finger and thumb of the right hand, turn *safety lock* down to the left with forefinger of the right hand in order to partially relieve the tension on the *mainspring*.

With the cocking piece against the chest, draw back the *firing pin sleeve* with the forefinger and thumb of the right hand and hold it in this position (see Plate 117) while removing the *striker* with the left hand. Remove *firing pin sleeve* and *mainspring*. Pull *firing pin* out of *sleeve*.

To assemble the bolt. First assemble the *sleeve* and *firing pin*, by having the *safety lock* turned down to the left to permit the *firing pin* to enter the *sleeve* as far as possible. Hold cocking piece against the chest and put on *mainspring*, *firing pin sleeve* and *striker*.

Hold the cocking piece between the thumb and forefinger of the left hand and by pressing the *striker point* against some firm substance, force the *cocking piece* back

PLATE 117.—Dismounting Bolt.

until the *safety lock* can be turned to the vertical position with the right hand. Insert the *firing pin* in the bolt and screw up until the *sleeve lock* enters its notch on the bolt.

See that the *cut-off* is horizontal, hold the rifle under the *floor plate* in the fingers of the left hand, thumb extending over the left side of the *receiver*. Then with the *safety lock* vertical and *safety lug up*, insert the *bolt*, pressing down on the rear end of the *follower* with the left thumb and "shove the bolt home. Turn *safety lock* and *cut-off* to the left.

To dismount the magazine. With a pointed object press through the hole in the *floor plate* on the catch and draw to the rear. This removes the *floor plate magazine spring* and *follower*. Raise the rear end of the *magazine spring* clear of the *lug* on the *floor plate* and draw out. Do the same with the *follower*. This dismounts the *floor plate*, *magazine spring* and *follower*. This operation is necessary to properly clean the rifle.

To assemble the magazine proceed in the reverse order.

To remove the *front sight cover*. Detach the lower end of your *sling*. Place the hooks in the end of the front sight cover and pull the right cover off.

To replace the front sight cover. Snap it into place.

Cleaning.

It is easier to clean a rifle often than occasionally, and the rifle cleaned once a week will outlive and outshoot a rifle not so cleaned.

Cleaning for ordinary use. This is the care that should be given the rifle after it has been used in drilling and in other exercises. Dirt gets into the *bore*, sweat from the hands and damp air quickly causes rust, therefore the rifle must be protected from these destructive agencies.

First go over the entire rifle and sling with a rag slightly oiled. Remove all dirt, carefully clean all screw heads and crevices, and then rub the entire rifle and sling with a clean dry rag.

Remove the bolt and floor plate as previously described.

Before cleaning the bore it is necessary to understand how cleaning rods and patches are used and that the bore is cleaned only from the breech. **NEVER CLEAN FROM THE MUZZLE.** Use a cleaning rack, or, if one is not available, place the *muzzle* on a piece of clean paper on the floor.

Insert a slightly oiled patch into the receiver well over the chamber. Place the end of the cleaning rod in the center and rub the bore thoroughly, finally discarding the patch by pushing it out the muzzle. Do the same with several dry patches and then, with a patch saturated with oil or a heavy grease, put a film over the inside of the bore. Return the bolt and magazine. Wipe all metal parts with an oily rag, apply a few drops of oil to the working mechanisms and put your rifle in its place.

Cleaning after firing. The advent of high pressure smokeless powder and cupro-nickel jacketed bullets has made the proper cleaning of the rifle, after firing, a chemical process. It cannot be cleaned once and put away safely any more, but it must be cleaned for four consecutive days after firing. The first cleaning should be on the evening of the day it is fired. The cleaning rod and patches are used as described in the preceding paragraph.

Swab out the bore with two successive patches saturated with sal-soda solution. The bore will then immediately be swabbed with a number of clean, dry patches until a patch run through the bore five or six times comes out fairly clean. The bore will then be examined by holding the breech up to the sky and looking through the bore from the muzzle. Examine the surface of the bore, particularly near the muzzle. If small flakes of bright metal are seen adhering to the surface of the bore, usually on the lands, this is metal fouling from the cupro-nickel jackets of the bullets, and the rifle should at once be taken to the supply sergeant or mechanic to have this removed with the standard metal fouling solution. If the bore appears spotlessly clean then swab it thoroughly with a final patch saturated with heavy grease (cosmic), and will put it away in this condition until the next day, when it will be cleaned again in the same manner, first removing the grease with patches before applying the swabbing solution.

The combined residue of powder and primer is very acid. The sal-soda swabbing solution neutralizes the acidity of all the fouling that it can reach. Some of the fouling, however, is covered up by the slight metal plating that the barrel receives from the bullets, and this covered up fouling sweats out onto the surface of the bore for two or three days following the first cleaning. If it is not neutralized by again cleaning for three days after firing, it will attack the steel and cause rust. Rust always causes a permanent injury to the bore. Metal is always destroyed by the rust, and nothing can replace it. No matter how slight and superficial the rusting, the bore is always injured, becomes rough on the surface, picks up metal fouling readily, and gives an enlarged grouping of shots. No rust should ever be permitted to form.

Other Powder Solvents—Expedients.

In lieu of the sal-soda swabbing solution issued by the Ordnance Department, riflemen may, if they so desire, use a swabbing solution composed of equal parts of amyl-acetate, acetone, sperm oil, and turpentine. This solution is particularly effective in the cleaning of .22 caliber rifles. There are several solutions of this nature

on the market termed "powder solvents." All the effective ones smell strongly of "banana" oil.

In an emergency, when none of the recommended swabbing solutions can be obtained, the best substitute is water, preferably boiling water. Oil has very little effect on the residue of smokeless powder, and should never be used until the bore has been cleaned by the swabbing solution or the water and then thoroughly dried.

Points to remember. If, in dismounting and assembling, you cannot easily get the part in or out something is wrong. Go to someone who knows. **NEVER USE FORCE.**

NEVER CLEAN FROM THE MUZZLE.

Always use a cleaning rod and patches.

Clean at the end of the days shooting and for three days thereafter.

Never shoot a rifle with dust, dirt, mud, snow, a patch or any substance in the bore. There will probably be an accident if you do. Wipe out the bore before firing.

Never point the rifle at anyone except a robber, burglar, or some such enemy. Sensible men don't take kindly to having fire arms pointed at them whether they are or are not loaded. A thoughtless or careless man in this matter is a menace to his comrades.

FIRST STEP.

SIGHTING AND AIMING.

Having learned the names of the parts and the care of the rifle the student can now intelligently take up the first step in the preparatory exercise. The equipment for this step consists of:

- 1 sighting bar.
- 1 rifle rest.
- 2 small aiming disks.
- 1 10-inch aiming disk.
- 2 small boxes to sit on.

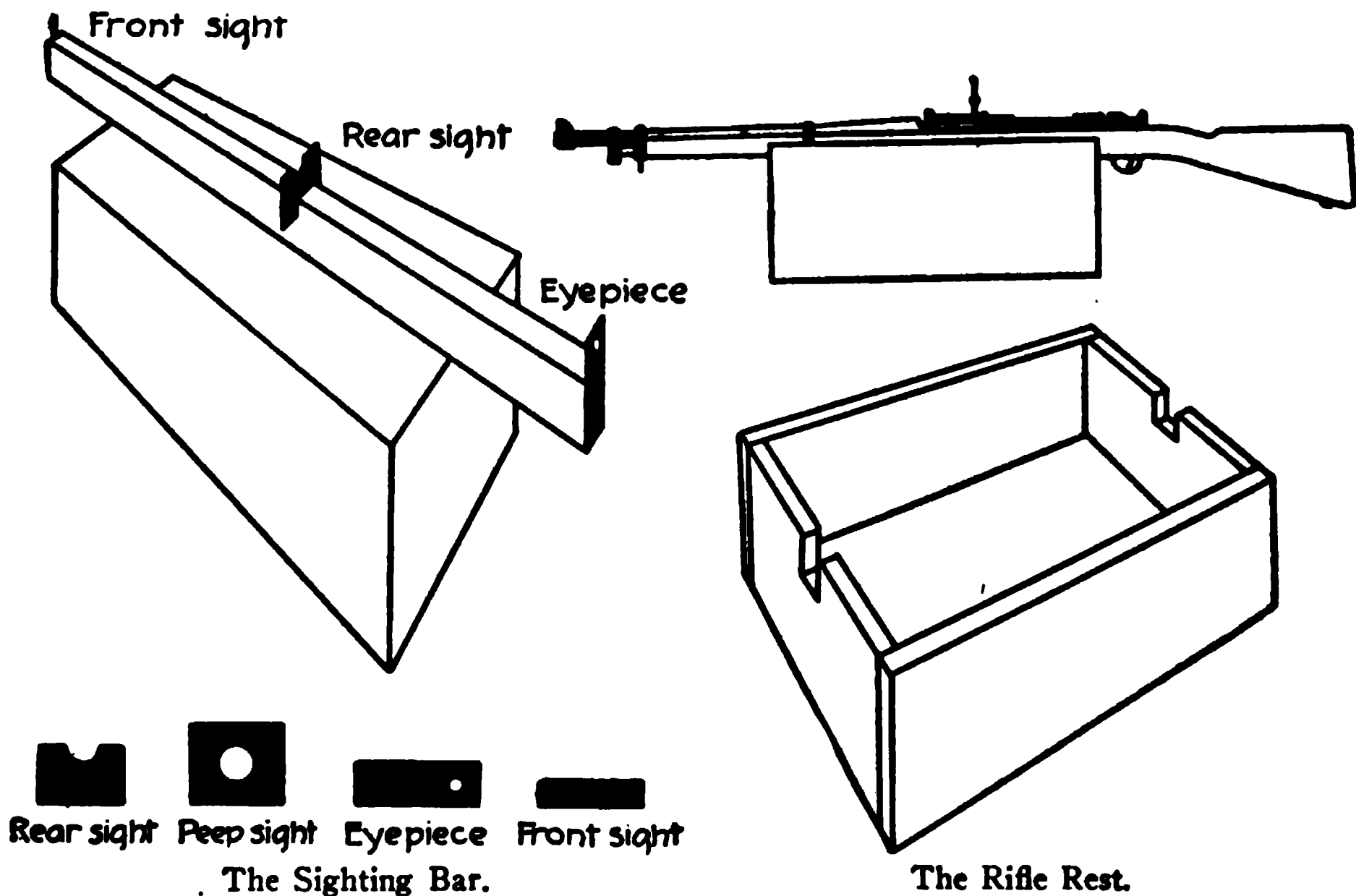


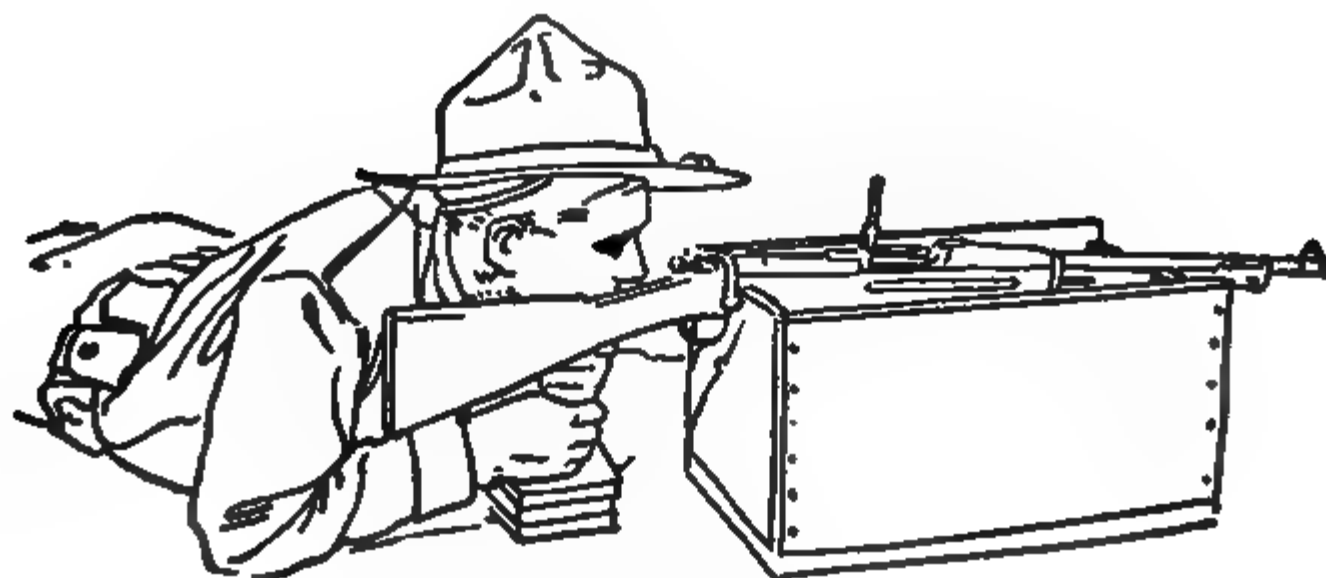
PLATE 118.

If two sets of equipment can be obtained for each squad, it is easier to keep all the men busy during this part of the training. Two sets of equipment will be used if obtainable.



Aiming Disks.

Diagram of Correct Sight Alignment.



Position in Aiming Exercise.

The apparatus and the exercises provide for instruction in both the peep and the open sight. The instruction in the open sight is included for the information of such individuals and clubs as have rifles with the open sight only. Rifles which have both the peep and open sights should be used entirely with the peep sight. It is far superior in every way.

Sighting bar. A bar of wood 1 x 2 inches x 4 feet with a thin slot 1 inch deep cut across the edge, 20 inches from one end. It has a front sight of tin or cardboard, $\frac{1}{2}$ x 3 inches tacked to the end nearer the slot and projecting 1 inch above the bar. An eye-piece of tin or cardboard, 1 x 3 inches, tacked to the other end of the bar, projects 1 inch above the bar with a small hole (0.03 inch) $\frac{1}{2}$ inch from the top. A peep rear sight, 3 x 3 inches, with a peep hole, $\frac{3}{4}$ inch in diameter, cut in the center. An open rear sight which is one-half of a peep rear sight. These sights are placed in the slot as needed. The top of the bar, the eye-piece, front and rear sights are blackened and the bar is placed on a box or table for use. (See Plate 118.)

Rifle rest. A strong empty box with the top removed and notches cut in the ends to fit the rifle. The rifle is placed in these notches with the trigger guard close to and outside of one end, the sling loosened and pulled to one side free from the notch. (See Plate 118.)

Aiming disc. One for each sighting bar and rifle rest. A small disc 3 inches in diameter, of cardboard or tin, with white paper pasted on it and a small bull's-eye in the center. The bull's-eye has a hole in the exact center just large enough to admit the point of a pencil. For indoor work or for short ranges the bull's-eye is the size of a 25 cent piece. For longer range work, a 10-inch disc is used at 200 yards and a 20-inch disc at 500 yards. Both are entirely black and with handles 4 or 5 feet long of the same color as the paper used. (See Plate 119.)

Normal Sight.

In order to sight and aim properly, it is necessary to know what the correct sight alignment looks like. Plate 9 shows the correct sight alignment with both the open and peep rear sights. The peep rear sight is the one most used. Notice that the front sight, as seen through the peep (the circle), is in the center of the circle and bisects it. The bull's-eye sits on top of the front sight and is tangent to (just touching) the top. That is the way the bulls-eye and front sight should look when you have the correct alignment. It is called the "*Normal Sight*."

To learn how to obtain this normal sight the sighting bar is used first instead of the rifle for two reasons:

1. The sights are larger and any errors made can be seen more easily and pointed out to the beginner.

2. The eye-piece on the sighting bar makes the one under instruction hold his eye so that he sees the sights in proper alignment. Without this the instructor cannot tell whether the beginner is holding his eye so that he sees the sights in proper alignment or not. The eye is always focused on the bull's-eye and not on the sights. In aiming, most riflemen use the right eye if right handed, and the left eye if left handed. Under no circumstances try to aim with the left eye while shooting right handed, or vice versa. It is better to shoot right handed since the working of the bolt handicaps a left handed rifleman.

Practical Exercise (1st Step).

First sighting exercise. To complete this exercise the students are divided into groups of 2, 3, or 4. Each group takes a sighting bar and each student in turn adjusts the sights so that the front sight is in the center of the circle, the top bisecting it. The coach will arrange the sighting bar on its box and, with a student holding the aiming disc, will direct him to move the disc until the bull's-eye and front sight show the "normal sight." All students are given an opportunity to see what this looks like. Next he (the coach), adjusts it with slight errors and the students look through it and describe the error seen. Finally each student ad-

justs the bull's-eye and sighting bar until he has a normal sight. When adjusting the bulls-eye and the sighting bar one student uses the bar, one coaches and one moves the aiming disc in front of a box which is placed 50 feet away. As the sighting bar is fixed and the disc is movable the student adjusting the sights tells his coach the direction he wishes the disc moved and the coach in turn signals with his hands, *Up, Down, To the Right, To the Left*, to the student handling the disc, who moves it accordingly. When the bull's-eye and sights are in the position sought by the worker the coach signals, "*Hold*," and the disc is held steadily in that position until the coach has verified the sights. As explained before the students rotate at each position until all have completed the exercise.

Second sighting exercise. Having learned to adjust the normal sight with the sighting bar, each group goes through the following exercise in the same way with the rifle in the rifle rest.

(a) With the rifle in the rifle rest, raise the rear sight leaf and point the sights at a blank piece of paper fixed on a box or on the wall 50 feet away. The coach first takes the prone position and looks through the sights. (See Plate 119.) By signal he causes the disc to be moved until he obtains the correct alignment. He then signals, "*Hold*." The student under instruction observes the correct alignment.

(b) The coach requires the student under instruction to obtain the same result himself, which is verified by the coach.

(c) The coach adjusts slight errors and requires the student to find them. The group rotates as in the previous exercise.

Third sighting exercise. In this exercise the sights are directed at a piece of blank paper and the coach requires the student undergoing instruction to obtain the normal sight. The coach signals, "*mark*," after he has verified the alignment. The marker (4 students in a group in this exercise, the extra one marking) without moving the disc makes a dot on the paper with the point of his pencil through the hole in the center of the bull's-eye. The student sighting makes three such marks, numbered consecutively and when these marks are joined he has a triangle. Each student should make several triangles. At 50 feet a triangle well made should cover a spot no larger than the unsharpened end of a lead pencil. The coach makes no comments on the sighting until the sighter is finished with all three marks.

The object of this exercise is to show the importance of correct and uniform aim and to instill into the mind a sense of exactness. Triangulation exercises should also be held at 200 and 500 yards, for at these ranges the conditions of aiming more nearly approximate the range conditions. At 200 yards the triangle should be covered by a silver dollar and at 500 yards no side of the triangle should exceed 2 inches. A record should be kept of all triangles.

Duties of coach for 1st step:

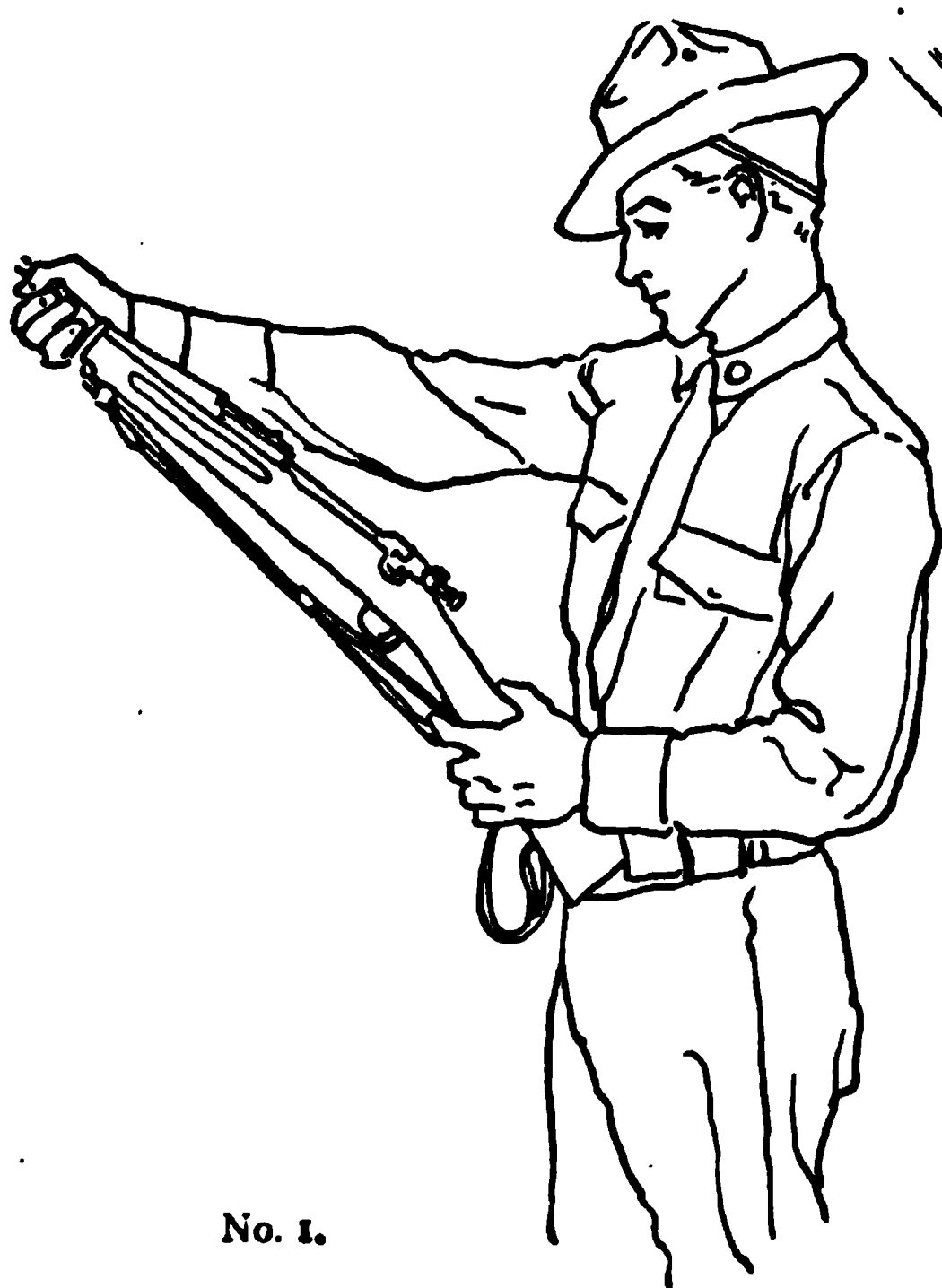
1. Arrange sighting bar and show normal sight.
2. Adjust sighting bar with errors and let sighter find them.
3. Take proper prone position and demonstrate normal sight.
4. Verify sights of student.
5. Adjust slight errors and let student find them.
6. Verify each mark of the triangle. Do not comment until the triangle is completed.
7. Signal for the student.

SECOND STEP.

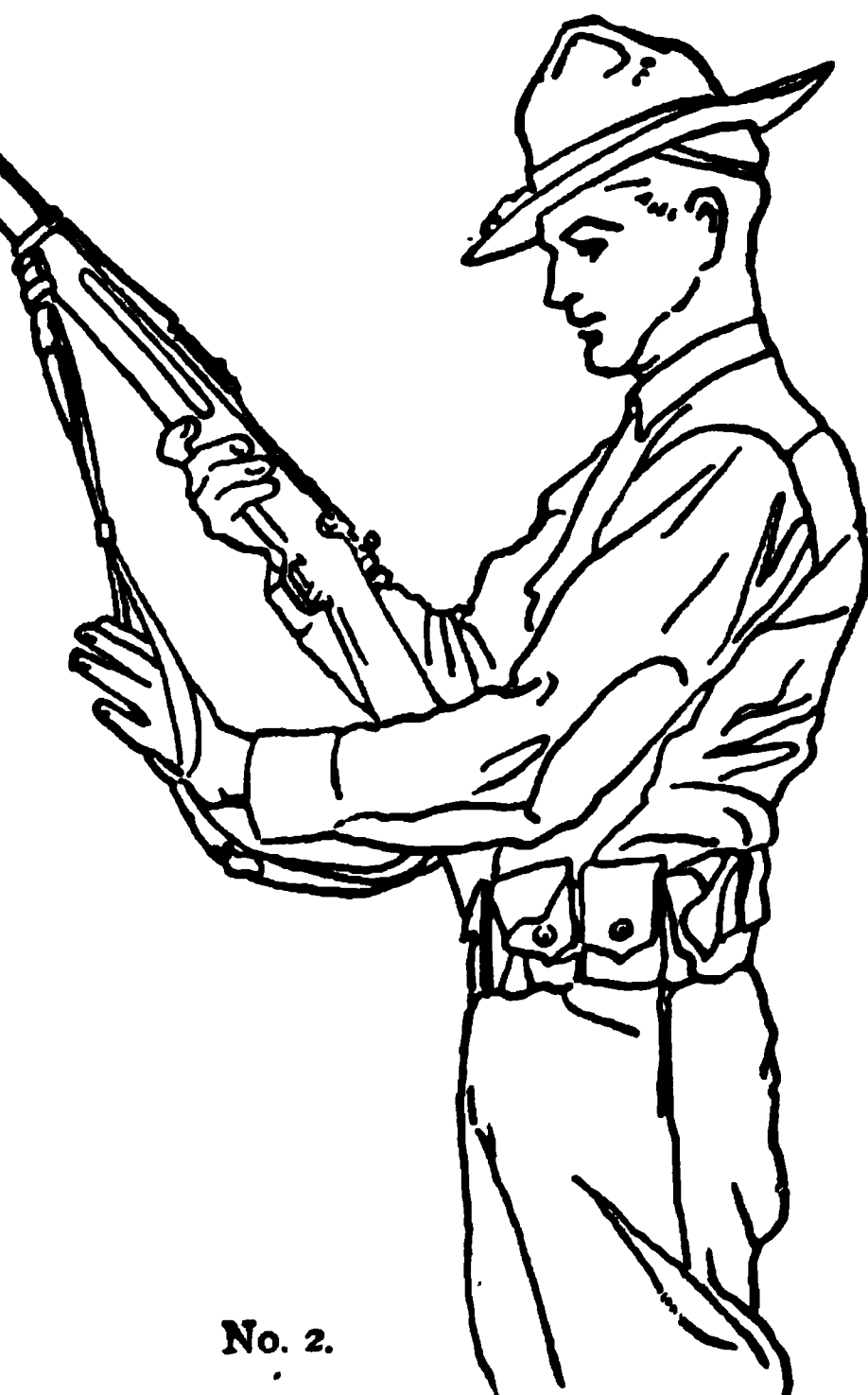
POSITIONS.

Importance.

Correct position is of great importance in teaching men to shoot. Instruction in positions involves the use of the gun sling, the correct manner of holding the breath, and the use of the aiming device.



No. 1.



No. 2.



No. 3.

The Gun Sling.

The sling is of material assistance in shooting. It helps to keep the rifle steady and to press the butt of the rifle against the shoulder with the same amount of force for each shot. The gun sling reduces the effect of the recoil.

Each student should be assisted by the instructor in adjusting his sling and it should be habitually carried with this adjustment. The lower loop can be tightened enough for drill or parade purposes. In shooting, the sling should be as tight as it can be made and still allow the student to get into it readily.

There are two methods of using the sling—the “loop position” and the “hasty sling” position. The loop position takes more time to adjust but it gives more support. The hasty sling adjustment does not give as much assistance in firing but it can be used in battle when the element of time, or other circumstances, makes it inadvisable to attempt the loop adjustment. The

loop position, being the one that gives more assistance to the firer, will be used in the early stages of training and in all long-range firing. Some instruction will be given in the *hasty* sling position. All students will be required to use one or the other form of gun sling adjustment in all problems and maneuvers when firing or when simulating fire.

The Loop Adjustment of the Sling.

The left arm is put through the upper loop from right to left and the leather keeper pulled down to hold it above the biceps muscle of the left arm. The left

No. 1.

No. 2.

PLATE 121.—Method of Adjusting Hasty Gun Sling.
POSITIONS.

hand is moved over the top of the gun sling to grasp the rifle. This causes the sling to lie smoothly along the hand and wrist. The lower loop is not used and should be so loose that there will be no pressure on it. (See Plate 120.)

The Hasty Sling Adjustment.

The sling is thrown to the left and caught above the left elbow high up on the arm. The left hand is then removed from the piece, passed under the sling and then

over it, regrasping the rifle with the left hand. The gun sling will then lie against the lower side of the left wrist. (See Plate 121.)

Holding the Breath.

The proper holding of the breath while aiming is very important and must be practiced at all times during position and trigger-squeeze exercises and whenever simulating fire.

To hold the breath, draw into the lungs a little more than an ordinary breath, let a little of the air out and stop it by closing the throat. Do not hold the breath with the throat open or by the muscular effort of the diaphragm, as if attempting to draw in more air. Close the throat and let the remaining air in the lungs press against the closed throat.

Aiming Device.

This device should be used freely in the preparatory position and trigger-squeeze exercises and gallery practice to instruct the students in aiming and to correct errors. It is a great help to the instructor in teaching students to shoot, both in preparatory work and in range practice.

PLATE 122.-The Use of the Aiming Device.

It is principally used in the position and trigger-squeeze exercises in the preparatory period. It cannot be used to advantage on the range except when there is a strong light on the target. It can always be used to good advantage in the preparatory exercises because the small aiming bull's-eye is so close that the outlines are distinct and the target can always be so placed as to be clearly seen.

If the aiming device has been used properly during the preparatory exercises, each student will have learned how to aim and there will be very little necessity for its use after range practice begins.

This device consists briefly of a combination of mirrors so adjusted that the instructor or coach in looking into them sees the sights and bull's-eye as the firer sees them. He is thus able to make the necessary corrections. It is adjusted as shown in Plate 122.

General Rules.

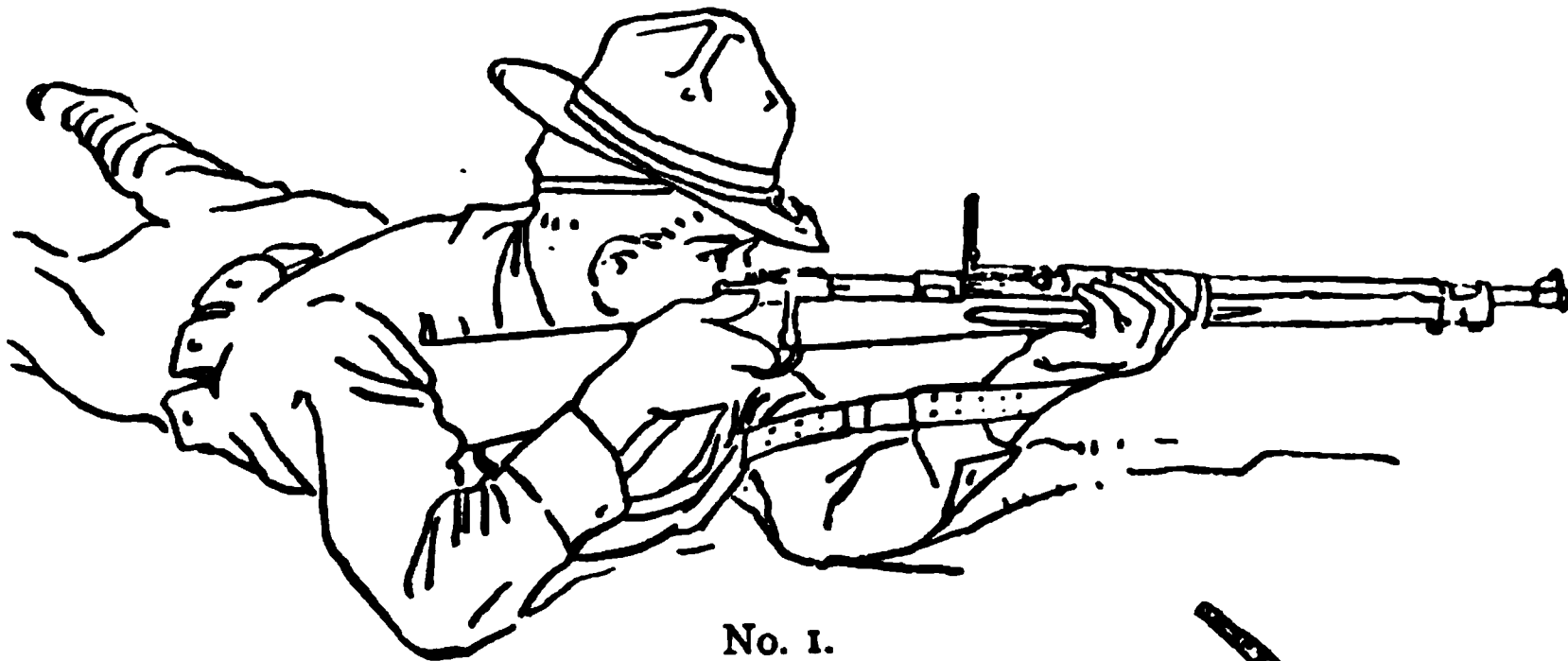
In all the positions the firer is half faced to the right.

When one assumes a normal position for shooting there is some spot at which the rifle will naturally point. If this spot is not the center of the target, he should shift his whole body so that the rifle points without effort at the center of the target, otherwise he will have to pull the sights on to the center of the target for each shot by muscular action and will be firing under a strain.

In all positions the right thumb is over the small of the stock except in cases of men the position of whose head is such as to cause the thumb to bump the nose in firing. In these cases the right thumb should be along the side of the stock instead of across it. Most riflemen place the thumb along the stock and not over it when firing the Model 1903 Army rifle.

The cheek should always be pressed firmly against the stock and as far forward as it can be placed without straining. It is desirable to have the eye as near as possible to the rear sight.

Left-handed men should be trained to shoot in the right-handed position if possible. If this is found to produce poor results in the case of any individual, he will be allowed to shoot in the left-handed position, but he must be given additional preparatory rapid fire practice to attain rapidity in working the bolt. Students who cannot close the left eye must shoot in the left-handed position, but in practically all



No. 1.

cases of this kind the student can, by practice, acquire the ability to close the left eye or to shoot with both eyes open.

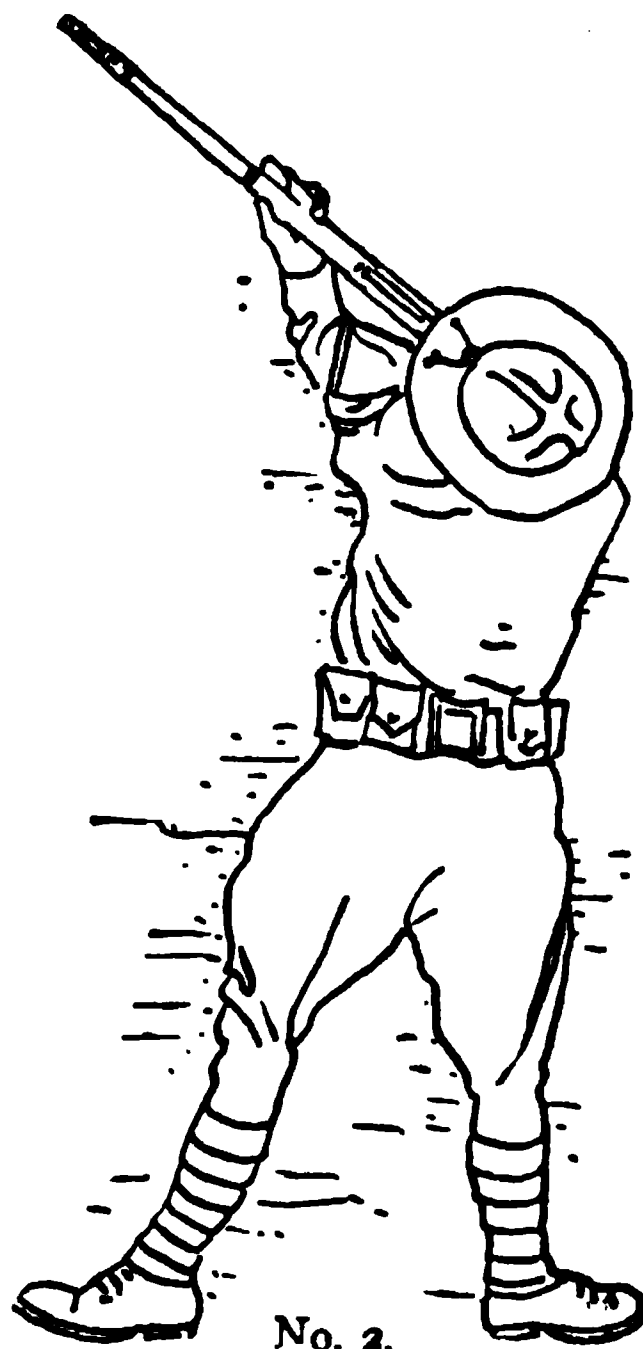
The trigger should ordinarily be squeezed with the second joint of the index finger. The first joint may be used by those the length of whose arm or the size of whose hand is such as to make it difficult to reach the trigger with the second joint, or to whom the first joint of the finger seems more natural and comfortable. Never press the trigger with the point of the finger. Get comfortable, for only then can you really fire effectively.

Prone Position.

Body lying at an angle of 45° to the line of aim; legs well apart; elbows well under the piece, raising the chest off of the ground; left hand grasping the piece just in rear of the lower band, the rifle resting on the palm of the hand; right hand grasping the small of the stock; cheek held firmly against the stock with the eye as near the cocking piece as it can be placed without straining.

The elbows should not be unduly spread apart, as this results in an unsteady position and brings the chest so near the ground that the neck has to be strained backward in order to see through the sight. This strained position of the neck interferes with good vision and tends to make the firer unsteady. The exact angle of the arms to the ground will depend somewhat upon the conformation of the student. The left elbow should be as nearly under the rifle as it can be placed without appreciable effort. The right elbow should be so placed that the right upper arm will not form an angle of less than 45° with the ground.

The exact position of the left hand will depend on the length of arm and width of chest of the individual. It should be as near the lower band swivel as the conformation of the individual will permit. The left hand should never be placed against, or near, the trigger guard.



No. 2.

PLATE 123.—The Prone Position.

The position of the thumb and fingers of the right hand should be such as not to hurt the face in firing. The thumb will usually be placed along the side of the stock instead of over it.

The gun sling should be tight enough to give a firm support. A tight gun sling will feel uncomfortable until the muscles of the arm have become accustomed to the pressure. When the gun sling is properly adjusted it is necessary to raise the right elbow from the ground in order to place the butt of the rifle against the shoulder readily.

When the proper prone position is assumed, the sights will be found aligned on the target when the rifle is brought to the shoulder. Avoid these errors:

1. Body at not great enough angle.
2. Elbows too far apart.
3. Left hand too near trigger guard.
4. Feet not flat, and turned out.
5. Legs not spread far enough apart.

Sitting Position.

Half faced to the right, feet well apart, well braced on the heels, which are dug slightly into the ground, body leaning well forward, with both arms resting between the legs and well braced, cheek held firmly against the stock and as far forward as it can be placed without straining, the rifle resting on the palm of the hand.



PLATE 124.—The Sitting Position.

The sitting position is used when firing from ground that slopes downward to the front and in practicing it the feet should be slightly lower than the ground upon which the firer sits. (See Plate 124.) Avoid the following errors:

1. Arms on top of knees.
2. Body too erect caused by not bending forward at waist.
3. Feet not far enough apart.

Kneeling Position.

Half faced to the right, kneeling on right knee and sitting on right heel, the left arm resting on the left knee with the point of the elbow beyond the kneecap, left lower leg vertical, right elbow at height of shoulder, cheek held firmly against



PLATE 125.- The Kneeling Position.

the stock and as far forward as it can be placed without straining. Sitting on the side of the foot instead of the heel is permitted.

Some men with long legs have to place the left foot more to the front in order to assume a steady position. The left lower leg in this case will not be vertical. (See Plate 125.) The following common errors should be avoided:

Lower leg not vertical.

Elbow on knee instead of over it.

Not sitting on heel or side of foot.

Standing Position.

Half faced to the right, feet from 1 to 2 feet apart, body erect and well balanced, left elbow pretty well under the rifle, left hand grasping the piece at or in front of the balance, rifle resting on the palm of the left hand, right elbow at the height of the

PLATE 126.—The Standing Position.

shoulder, butt held firmly against the shoulder, right cheek held firmly against the stock and as far forward as it can be placed without straining. The position with the left hand against or under the trigger guard and left elbow resting on the hip is not a practical position and will not be used. (See Plate 127.) Avoid these errors:

1. Right elbow too low.
2. Body not erect or well balanced.
3. Not half faced to the right.
4. Right foot straight back of left.
5. Left hand back of the balance.
6. Too much weight on right leg resulting in leaning back too far.

THE SANDBAG REST.

Object.

The sandbag rest is used at the beginning of the course, not to teach steadiness of hold, but to aid instruction in the proper method of squeezing the trigger. The sandbag assures such a steady hold that the beginner is not tempted to "snap" in his shot the instant the sight touches or drifts by the bulls-eye. This eliminates the chief cause of nearly all bad shooting.

With the sandbag rest the sights can be held steadily at the bottom edge of the bull's-eye, while the trigger is being squeezed *with such a steady increase of pressure as not to know when the rifle is going off. This is the basis of all good shooting.* After acquiring the habit of trigger squeeze the sandbag is no longer used except at the long ranges.

Use and Adjustment.

An ordinary grain, or similar bag is filled about one-half full of sand and the bag securely tied near the opening. This leaves an amount of free space in which the sand may be moved according to the need.

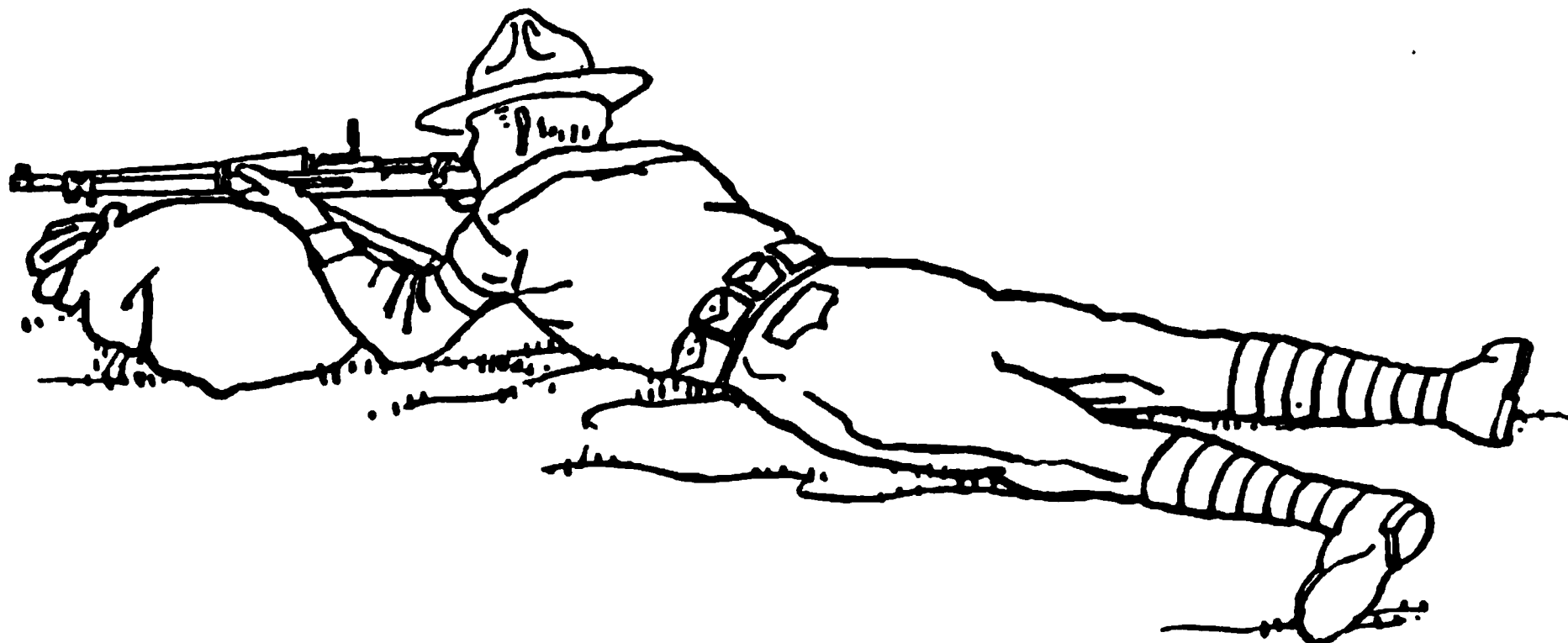


PLATE 127.—The Sandbag Rest Position.

The firer gets into his normal position (prone) and the bag is fitted to him by the coach. (See Plate 127.) Remember that the sandbag should fit the firer in his normal position. The firer should not alter his position to fit the sandbag. The sand in the bag should be so arranged that it will support the left forearm and wrist with the left hand, not the rifle, lying on top of the bag, rifle lying in the hand.

The bag is always stood on its bottom, never lay the bag on its side as there is no way of adjusting the bag in this position. It is important that the sandbag rest be high enough to permit the taking of the normal position. The tendency is to have the bag too low, thereby causing the firer to be very flat on the ground, with his elbows spread far apart. This is incorrect and results in poorer firing than if no sandbag were used. When properly used the sandbag is of great help, but when improperly used it is a handicap.

Positions in Standing Trench.

These positions will vary according to the style of trench and build of the individual. In general, it is a good plan to have as many points of support for the body and arms as possible.

In a trench that has no berm (shelf) for the left elbow the position is the normal standing position, with the left hand against the top of the paparet and the rifle, just beyond the hand, resting on the parapet.

With the berm, the position is about the same except that the left elbow rests on the berm.

When the berm, is wide enough, as it often is, both elbows can be rested on it, and the position of the upper part of the body is about the same as in the prone position with the sandbag rest.

PLATE 128.—Trench Positions.

In all positions in a trench lean well against the butt of the rifle to insure firmness and steadiness.

Taking Positions Rapidly.

Practice will be held in assuming rapidly the kneeling, sitting, and prone positions. It was proven in the "surprise fire" events in the national matches in 1913 that the prone position can be taken and an accurately aimed shot fired more quickly than any other position. The ability to assume this position rapidly is a distinct advantage in war. It permits the firer to fire an aimed shot more quickly than if he remained standing and it also reduces the enemy's target from a standing figure to a prone figure.

Assuming the Prone Position.

The movement is described by the numbers for the purpose of instruction and to show the sequence of movement. After this sequence is learned it should be executed as one motion. With practice, one can take the prone position and be aiming at the target in two seconds.

1. Being at the "ready," sling adjusted, throw the right foot well back and stoop down as far as possible, placing the butt of the rifle on the ground 4 or 5 inches to the left, and slightly in front, of the spot where the right elbow is to rest, retaining the grip on the rifle with both hands.
2. Place the right elbow on the ground.
3. Place the left leg back near the right, feet apart, and slide well back lying on the belly.
4. Take the butt of the rifle off the ground and place it against the right shoulder.
5. Lower the left elbow to the ground.

This will bring the firer into his normal position, with the rifle pointing at the target. Care should be taken to place the butt of the rifle on the ground without jar and to place the elbows on the ground in the same manner. With practice this position can be assumed very rapidly and without shock.

When the details of this movement have been learned it should be practiced as one movement. When properly done the feet will still be sliding back into position

No. 1.



No. 4

No. 5.

PLATE 129.—Taking the Prone Position Rapidly.

when the rifle is being placed on the shoulder, and the left elbow will come to the ground at almost the same time that the backward movement of the body is completed.

Assuming the Sitting Position.

To assume the sitting position rapidly break the fall by placing the right hand on the ground slightly to the right rear of the spot on which to sit.

In practicing for range firing, first sit down and aim at the target in the normal sitting position. Then mark the position of the heels and the spot on which to sit. Then at the command "ready on the firing line," stand with the heels in the places made for them, and as the target appears sit down on the spot marked, breaking the fall with the right hand; regrab the small of the stock with right the hand and assume the aiming position.

Practical Exercise (2d Step).

Position exercise. Instruction in positions is the second step in the preparatory training. As each step includes everything that has preceded, the exercises in positions include correct sighting and aiming. The sights will be blackened for position exercises.

The use of the gun sling, the correct manner of holding the breath, the method of taking up the slack on the trigger and the use of the aiming device are all taken up at this time as being a necessary part of the instruction in positions.

The instructor places his platoon or squad in line with two-pace intervals, shows them the standing, sitting, kneeling, and prone positions, and has them assume these positions, correcting any errors that exist. He then shows them the hasty-sling adjustment, explains its use and has each student adjust his sling and assume the various positions. He does the same thing with the loop adjustment of the sling.

The instructor next explains the correct method of holding the breath and has all practice it a few times.

He then shows them the "slack" on the trigger and explains that the taking up of the slack is part of the position exercise because it should be taken up by the finger as soon as the position is assumed and before the careful aiming is commenced. He explains that the slack is taken up all at once and not gradually. The aiming device is then shown and its use explained.

These points having been shown to the assembled command, the instruction becomes individual under the supervision of a coach. Those who, for the time being, are not coached by an officer or non-commissioned officer are placed in pairs with instructions to take turns in coaching each other, either in position exercises or in the sighting exercises of the previous step.

The instruction in position with the sandbag rest is individual as there is usually only one sandbag to each squad.

In the position exercises the coach watches the following points:

1. That the gun sling is properly adjusted, is tight enough to give support, and is high up on the arm.
2. That the proper position is taken.
3. That the slack is taken up promptly.
4. That the aim is correct.
5. That the breath is held while aiming.

As soon as the aim becomes unsteady the exercise ceases and after a short rest is repeated. The details are the same for all positions.

The coach at times watches the aim through the aiming device. At times he watches the student's back to see if he is holding his breath properly.

Small aiming bull's-eyes are provided for each pair under instruction. These bull's-eyes must be placed at different heights so that in aiming from the various positions the rifle will be horizontal.

Where the ground is available it adds to the interest and value of the practice to have full-sized targets at which to aim placed 200, 300, or 500 yards away. In this

case one target is sufficient for from 10 to 20 pairs. The Trigger is not squeezed in these exercises.

Duties of coach in 2d step:

1. See that the sling is properly adjusted.
2. See that the proper position is taken.
3. Adjust the sandbag.
4. See that the slack is taken up promptly.
5. Check the aim.
6. Watch that the breath is properly held.

THIRD STEP. TRIGGER SQUEEZE.

Importance.

The one most important item in shooting is to squeeze the trigger in such a way as to fire the rifle without affecting the aim. The trigger must be squeezed so steadily that the firer cannot know the instant the piece will be fired. Any one can hold the rifle steady enough to make a good shot, and he can so hold it for a comparatively long time. Bad shots are made by spoiling the aim just before the discharge takes place. This is done by jerking the trigger and flinching. Everyone flinches more or less. Flinching is an instinctive and subconscious act over which no one has control. If a man squeezes the trigger so steadily that he cannot know when the discharge will take place, he does not spoil his aim, and he cannot flinch, because he does not know when to do it.

No good shot attempts to fire at any instant at which his sights are aligned on the mark. That is what the poor shot does. The good shot holds his aim as accurately aligned on the mark as possible and maintains a steady pressure upon the trigger until the piece is fired. The good shot is not distinguished by a quick eye; he is the man with the "steady trigger." This method of squeezing the trigger must be carried out in all preparatory practice or the whole value of the practice is lost.

There is only one correct method of squeezing the trigger—a steady increase of pressure so that the firer does not know when the discharge will take place.

Excellent shots are those who, through training, have learned to increase the pressure only when the sights are in absolute alignment with the bull's-eye. When the sights get slightly out of alignment, they hold what they have with finger and only go on with the increase of pressure when the sights again become properly aligned. Take the following example to demonstrate why the trigger must be squeezed and not jerked.

Lay the rifle on a table and assume it is in a machine rest which runs on a track parallel to the target. Suppose a shot is fired which hits the right edge of a 36-inch bull's-eye 1000 yards away; then the rifle, in its rest, is moved on the tracks 36 inches to the left. The shot fired here will hit where? The left edge of the bull's-eye of course. Then a shot fired anywhere between the two points will hit the bull's-eye. Assume however, that the butt of the rifle is held fixed and the muzzle is moved a fraction of an inch to the right or left. The resulting shot will be a miss.

The same thing occurs when the trigger is not squeezed but pulled or jerked suddenly. The natural movements of the body and its pulsations produce more or less parallel movements of the rifle. Very often apparently very unsteady men make good scores because they squeeze the trigger so as not to know when the rifle is going off and the shot is displaced only by the parallel movement. But if the trigger is jerked or pulled suddenly the muzzle is deflected and the shot is a poor one.

The difference between poor shots and good shots, good shots and very good shots, and very good shots and excellent shots is only the difference in their ability to squeeze the trigger properly. The heart and soul, the beginning and end of good shooting is the trigger squeeze. Any man with fair eyesight and strength enough to be on his feet at all can align the sights on the target and hold them there for an

appreciable length of time. When he has acquired sufficient will power and self-control to forget that there is to be an explosion and a shock and squeezes the trigger with a steady increase of pressure until the piece is fired, he has become a good shot, and not until then.

This applies to rapid fire as well as slow fire. The increase of pressure is faster in rapid fire, but the process is the same.

Calling the Shot.

The firer must always notice where the sights are pointed at the instant the piece is fired and call out at once where he thinks the bullet will hit. This is done even when only simulating fire at a mark, so as to acquire the habit and to develop a closer hold.

No one can become a good shot until he is able to call his shot before it is marked. Inability to call a shot indicates the firer did not know where the sights were pointing at the time the piece was fired; in other words, he shut his eyes first and fired afterwards.

Practical Exercise (3d Step).

Trigger squeeze exercise. The third step in the preparatory training, and the most important, is the instruction in trigger squeeze. This instruction is individual. The student is very carefully coached every time he presses the trigger until he can be classed as "excellent" upon this point.

Simulate fire will not be used until all have been thoroughly instructed in trigger squeeze, and then in all drills and field exercises where fire is simulated they will be cautioned to aim at definite objects and to carry out the correct principles of aiming, squeezing the trigger and calling each shot. Careless trigger squeezing in field exercises may injure one's chance of becoming a good shot.

The instructor first assembles the squad or platoon, explains the importance of correct trigger squeeze, shows them the slack and how to take it up with the finger. He learns by questions if the men understand what is meant by a "steady increase of pressure"—i. e., that the increase is only applied when the aim is correct, and then by a steady increase and not by a sudden pressure.

The second phase of this exercise is individual instruction under a coach. The student is first taught the trigger squeeze in the prone position with the sandbag rest. In this position he can hold steadily and has not the temptation to "snap" the shot the instant the front sight touches the bull's-eye, as he has in an unsteady position, such as standing or kneeling. After he has learned the principles of trigger squeeze with sandbag rest, he is instructed in the other positions, but for the first day at least he is not allowed to practice except in the prone position, first with and then without the sandbag rest.

The coach notes all the points taken up in previous instruction in addition to the squeezing of the trigger.

Details of the trigger-squeeze exercise:

1. Adjust the sling properly, tight enough to give firm support and high up on the arm.
2. Assume the correct position with the rifle pointed at the target.
3. Take up the slack.
4. Align the aim accurately on the bull's-eye.
5. Hold the breath.
6. Press the trigger (only when the aim is right and then only with a steady pressure).
7. Call the shot.

The coach occasionally checks the aim by means of the aiming device and the breathing by watching the back of the student under instruction.

A great deal of trigger-squeeze exercise is necessary, but it must be carefully watched and coached. Trigger-squeeze exercise that is not along the right lines is worse than none.

Duties of coach in 3d step:

1. Observe all points of the 2d step.
2. Watch that the trigger is squeezed.
3. Have each shot called.

FOURTH STEP

RAPID FIRE.

General Principles.

Rapid fire is merely continuous fire from which all lost motion is eliminated as much as possible. On the range it consists of firing a specified number of shots within a given time. In battle it is the usual type of fire. Battles are won by "superiority of fire" and this depends on the ability of the troops to deliver a rapid and accurate fire.

Rapid fire, therefore, does not mean that accuracy is sacrificed to rapidity. Fire that is rapid without being accurate is of no value. It is merely a waste of ammunition that a well-trained man might use to advantage. It is through the elimination of lost motion in working the bolt, keeping the rifle in position and picking up the target that the rapidity is gained and the accuracy maintained.

All the points learned in slow fire, (correct aim, correct position, holding the breath properly and correct trigger squeeze) are carried out in rapid fire. The trigger is squeezed in exactly the same manner but, through training, the increase of pressure becomes faster until one has acquired the ability to fire from 10 to 15 shots, accurately, per minute. It is not advised to attempt to fire more than 10 shots per minute until there has been long training in actual firing and one has become a seasoned shot.

Bolt manipulation. The first thing to learn in saving time in rapid fire is to properly manipulate the bolt. This is done in one continuous movement by grasping the handle of the bolt, raising and pulling it back at the same time. The bolt is "shoved home" in the same manner, with one continuous movement. The bolt is worked as rapidly as possible. In this way the four customary movements of raising the bolt handle, pulling it back, pushing it forward and lowering the handle are cut to two movements. Remember to work the bolt rapidly.

Keeping position. During the bolt manipulation the tendency is to lower the butt of the rifle from the shoulder and to raise the elbow from the ground. The getting back into position consumes valuable time. To avoid this, drop the muzzle of the rifle to the right and slightly down each time the bolt is worked. This keeps the rifle and firer in proper position thereby saving time.

Keeping eye on target. One of the greatest difficulties in rapid fire is to avoid watching the bolt shove the cartridge into the chamber (chamber gazing), thereby losing the target and the valuable time used in recovering it. The rifleman who does this frequently fires on the wrong target. The disadvantage of this fault in war is easily seen if, when firing at an enemy, the eye is shifted from him to the chamber. When ready to fire again the enemy has probably moved, and, not having watched him the firer does not know where he has gone. Meanwhile he is probably firing a carefully aimed shot in your direction. Keep your eye on the enemy. Keep your eye on the target. *Do not chamber gaze.* The follower holds the bolt back when the clip is exhausted, then and not until then is it necessary to look anywhere but at the target.

Reloading. To load a clip of ammunition, place the clip in the clip slot, point of bullets to the front. With the thumb on the powder space of the top cartridge and the fingers under the rifle against the floor plate, shove the cartridges into the magazine with a firm steady push.

If the cartridges are in the belt, as they ordinarily will be, take them quietly and confidently from the pocket of the belt and place them in the clip slot. A hurried movement usually is accompanied by dropping the clip. This necessitates wiping

off the dirt, causes fumbling and the consequent loss of time. Remember that this is a time when, "haste makes waste."

Summary: To save time and still maintain accuracy in rapid fire.

- a. Work the bolt rapidly, smoothly and in one continuous movement.
- b. Keep the elbows on the ground.
- c. Keep the rifle in position.
- d. Keep the eye on the target (DO NOT CHAMBER GAZE).
- e. Reload without fumbling.

Practical Exercises (4th Step).

Rapid fire. Training for rapid fire extends throughout the year. All simulation of fire during problems and maneuvers should be carried out along the proper lines.

The instructor first demonstrates to the assembled command:

a. The correct method of bolt manipulation in the various positions, emphasizing the fact that the rifle should not be taken from the shoulder or the eye taken from the target until the magazine is empty.

b. The disadvantage of looking into the chamber while working the bolt and of looking into the chamber to see if there are any more cartridges left.

c. That the follower holds the bolt back when the magazine is empty and that the eye is never taken from the target until this occurs, except when a man has counted the shots fired and knows that his magazine is empty.

d. The working of the bolt while in the prone position, keeping both elbows on the ground and allowing the muzzle to drop slightly down and to the right.

e. How the bolt is jerked fully back and slammed home with practically one motion, instead of by four distinct motions as beginners are usually inclined to do at first.

f. How to load a clip of ammunition into the magazine, using dummy cartridges for the demonstration. The ball of the thumb is placed on the powder space of the upper cartridge very close to the clip, with the fingers under the rifle against the floor plate, the cartridges being shoved into the magazine with a firm, steady push.

g. That the quiet confident movement of the hand in taking the clip from the belt and placing it in the clip slot is really more rapid than a hurried movement and avoids the chance of fumbling which usually accompanies hurried movements.

h. The method of tying back the trigger for the bolt manipulation exercise and the manner of executing this exercise.

These points having been demonstrated and explained, the instruction becomes individual under the supervision of a coach. The students are arranged in pairs and alternate in acting as coach under the supervision of the officers and non-commissioned officers of the command.

The first two hours of rapid-fire training is devoted to bolt manipulation only. Thereafter each student will be given additional practice from time to time until he can work the bolt 20 times in 20 seconds while in the prone position.

Manipulation Exercise.

In this exercise the trigger is tied back to the trigger guard permitting the firing pin to move forward each time the bolt is shoved home. If this is not done the piece will remain cocked and the bolt action will not be the same as when actually firing the rifle. The object of this exercise is to acquire a smooth and rapid bolt manipulation, a very important part of the training.

The bolt is worked as rapidly as possible. The right hand is brought to the small of the stock and the barrel of the rifle to a horizontal position each time the bolt is shoved home. No attempt is made to aim or to press the trigger. The eye remains on the target, the butt of the rifle is kept to the shoulder, and while in the prone position both elbows remain on the ground.

Those under instruction being in position with gun sling adjusted, the instructor gives the command "Go" to start the exercise, and at the end of 20 seconds the command "Halt."

This exercise should be held in all positions, but more practice will be required in the prone than in any other position. A few minutes of this kind of practice every day during the month that precedes the target practice season will materially increase the rapid-fire scores.

Rapid-Fire Exercise.

In this exercise, as in all exercises, the students are placed in pairs and alternate in going through the exercise and in acting as coach. A platoon or company is placed on one firing line and the commands and procedure are the same as in range practice.

A line of "D" targets is placed at a distance of 200 yards from the firing line. If the ground permits, lines of targets are also placed at 300 yards and 500 yards.

The commander of the firing line keeps the time and by means of pre-arranged signals has the targets exposed to view, and then concealed at the end of the proper time limit.¹

Sights will be set at the actual range.

Practice dummy ammunition, issued by the Ordnance Department, will be used if available. Range dummy ammunition will never be used except on the firing line of the rifle range.

Rapid-fire exercise will be held in all positions. More time will be devoted to practice in the prone position than any other, as this position is most used and is also the one requiring the most practice to obtain a smooth, rapid bolt manipulation.

Duties of the coach in rapid-fire exercise to—

1. Watch the firer adjust the gun sling.
2. Watch him get into position.
3. Lie down beside him in the proper position of a coach
4. See that he takes up the slack properly.
5. Shift the gaze to his eye to see if he flinches.
6. Watch him work the bolt to see that he works it rapidly, keeps his eye on the target, his elbows on the ground, and the rifle to his shoulder while working it.
7. Watch his finger again to see that he takes up the slack promptly, then shift the gaze to the eye, etc.
8. Note method of reloading when magazine is empty.
9. Be alert and correct all errors.

EFFECT OF WEATHER CONDITIONS: SIGHT CHANGES— SCORE BOOK.

Effect of Wind Only is Important.

With the exception of wind, weather conditions have practically no effect on the bullet up to 600 yards. Beyond 600 yards the effect is slight, but it is well for the expert shot to understand the influences of the different atmospheric conditions and the corrections to be applied.

Temperature.

Warm air offers less resistance to a bullet than cold air. Consequently the colder the day the more elevation will be required. The changes in temperature during any one target season are not as a rule great enough to make any appreciable difference in the amount of elevation required, even at long range.

¹ A curtain of target cloth or other material may be arranged on each target frame in such a way that it can be dropped to expose the face of the target and pulled back up again to conceal it. This is done by means of a cord which runs over the top of the target frame.

Humidity.

Moist air offers less resistance to a bullet than does dry air. At long ranges, rifles usually require slightly less elevation on a day in which the air is damp than when the air is very dry. Temperature and humidity often counteract each other.

Wind.

In firing at 600 yards or under, the effect of weather conditions on the bullet can be disregarded, except that of wind. The influence of wind must be carefully studied.

The horizontal clock system is used in describing the direction of the wind. The firing point is considered the center of the clock and the target is at 12:00 o'clock. A 3:00 o'clock wind comes directly from the right. A 6:00 o'clock wind comes straight from the rear. A 9:00 o'clock wind comes directly from the left, etc. A wind that is constantly changing its direction back and forth is called a "fish-tail wind."

The worst kind of a wind in which to shoot is a fishtail wind at 12:00 or 6:00 o'clock.

The force of the wind is described in miles per hour. This is shown accurately by an instrument called an anemometer. The force of the wind is estimated by throwing up light dry grass, dust, or light paper and watching how fast it travels, by observing the danger flags, and by the mirage. In general a light breeze is a 5 to 8 mile wind; a fairly strong breeze is a 10 to 12 mile wind. Wind blowing 20 miles an hour is very strong.

Wind from either side blows the bullet out of its path. This must be allowed for by moving the rear sight toward the wind by means of the wind gauge.

The amount the bullet will be blown from its path depends on the force and direction of the wind and on the distance to the target.

The amount of windage to allow for the first shot is shown in the "wind chart" in the score book and can be found approximately by applying the "wind rule."

After the first shot is marked the correction necessary in the windage is found by referring to the vertical lines in the "model targets" for each range shown in the score book, or by estimating in inches how far the hit must be moved to bring it to the center and applying the "wind-gauge rule."

Wind Rule.

The range (expressed in hundred of yards), multiplied by the velocity of the wind and divided by 10 equals the number of quarter points to allow for a 3:00 o'clock or 9:00 o'clock wind.

Example:- At 500 yards the wind is blowing 8 miles per hour at 3:00 o'clock,

$$\frac{5 \times 8}{10} = 4 \text{ quarter points or 1 point of windage.}$$
 The sight should have 1 point of right windage for the first shot.

As the direction of the wind gets nearer and nearer to 12:00 or 6:00 o'clock the amount of windage necessary becomes less and less. Winds one hour away from 3:00 and 9:00 o'clock require only slightly less windage. Winds one hour away from 12:00 and 6:00 o'clock require almost half as much windage as 3:00 or 9:00 o'clock winds.

Winds that are at 12:00 or 6:00 o'clock require no windage, but it is a very rare thing to have a steady wind from either 12:00 or 6:00 o'clock. Strong winds from 12:00 o'clock tend to retard the bullet a little, and from 6:00 tend to accelerate the bullet, but the amount is so slight that a correction in elevation is very seldom necessary. At the most this allowance is very small.

Wind-Gauge Rule.

One point of windage moves the point of impact of the bullet 4 inches for each 100 yards of range.

Thus one point of windage will move the hits 8 inches at 200 yards, 12 inches at 300 yards, 20 inches at 500 yards, etc. This rule is not exact, but near enough for all practical purposes.

The point of impact of the bullet will move in the same direction as the rear sight is moved. For example, if it is desired to move the hits to the left the rear sight must be moved to the left; if it is desired to make the hits strike lower and to the right, the rear sight must be moved down and to the right.

Mirage.

Heat waves that can be seen near the ground are called "mirage." The direction in which these waves are blowing and their speed are watched by good shots in judging the direction and velocity of the wind. The mirage is of assistance in judging the wind principally on bright days when there is a light, variable breeze.

In a moderate wind the waves seem to race across the range and to lie close to the ground. In a light wind the waves do not lie so close to the ground and appear to move more slowly. In strong winds the mirage cannot be seen.

When there is no wind or when the wind is at 12:00 or 6:00 o'clock the mirage seems to boil. The "boiling" of the mirage signifies that the wind is changing direction, and the firer should wait until the mirage begins a steady flow from one side or the other before firing.

Mirage can be seen much better with a field glass or telescope than with the eye alone.

Elevation Rule.

Changing the elevation 100 yards at any range will give a change on the target, in inches, equal to the square of the range (expressed in hundreds of yards).

Example: At 200 yards changing the elevation 100 yards makes 4 inches change on the target; at 300 yards, 9 inches; at 500 yards, 25 inches; at 600 yards, 36 inches, etc.

This rule is not exact, but near enough for all practical purposes.

The horizontal lines in the model targets also show how much change to make in the elevation at each range. When a change in elevation is necessary it is best to consult the model target before deciding how much of a change to make.

Light.

Light has no effect on the bullet, but does affect the aim. The effect of changes of light is very slight with most riflemen. The correction for variations in light does not exceed 25 yards in elevation at any range. The effect of changes of light is not uniform in its effect upon the aim of all riflemen.

As a general rule men unconsciously aim a little lower in a bad light than in good light and consequently need more elevation when the light is poor. This is due to the fact that the outline of the bull's-eye is not distinct in a bad light; therefore men cannot hold as close to the bull's-eye and still be sure of their aim.

As a rule bad lights exist on dark days when there is a haze in the air; on very bright warm days when there is a decided mirage; and when the sun is back of the target.

The best light for shooting is when the sky is uniformly overcast and there is sufficient light to see the target clearly.

Sunlight from one side has the same effect, with most men, as wind from that side. This is because the side of the front sight toward the sun is more clearly defined and unconsciously held under the center of the bull's-eye. This places the bullet on the opposite side of the bull's-eye from the sun. The allowance of windage for sunlight varies from one-fourth to almost one-half a point. In making this allowance the sight is moved toward the sun.

The Zero of a Rifle.

The zero of a rifle for each range is the point at which the rear sight must be placed, as to both elevation and windage, in order to hit the center of the bull's-eye

or a normal day when there is no wind. This zero may not conform to the marks on the sight leaf and the wind gauge. The zero of any one rifle may differ with different men owing to the difference in their way of holding the rifle, or of aiming.

Each rifleman should determine the zero of his own rifle for each range. He does this by writing down in his score book the sight settings and changes made during the firing of each score, together with the kind of light, the direction and velocity of the wind and by a study of this data. The zero of a rifle is best ascertained on a day with an overcast sky when there is no wind. Once having learned the zero of his rifle, all his windage allowances for the first shot are made from this zero and not from the zero marked on the wind gauge unless the two are the same.

Shooting Up or Down Hill.

In shooting either up or down hill less elevation is needed than when shooting on the level. The steeper the hill the less elevation needed, so that when firing vertically up or down no elevation at all is needed, no matter how distant the target. Slight slopes that may be found on target ranges have no appreciable effect upon the elevation used.

Canting the Rifle.

If the rifle is canted, the bullet will not hit where the rifle is aimed. Canting the rifle to the right makes the shot hit low and to the right. Canting the rifle to the left makes the shot hit low and to the left. Even unskilled shots, however, cant the rifle but very slightly, and the effect on the strike of the bullet is correspondingly slight.

The mistake of ascribing a wide 4 or 3 to a slight cant of the rifle should not be made.

The Use of the Score Book.

Each rifleman must keep a score book in which he records, not only the value of the hits but the location of each hit, the sight setting and sight changes, the force and direction of the wind, the kind of light, the hour, and date and such other data as may be of use in the future, spaces for these notes are provided on the score sheets of the score book.

The use of the score book on the range is important for the following reasons: (a) The plotting of the shots shows the firer the location of his group. (b) The wind chart indicates the windage to take for the first shot. The model target shows by means of vertical and horizontal lines the change in elevation and windage necessary to place the group in the center of the target. (c) Plotting the shots and recording the data as to light and wind helps one to learn the zero of his rifle. (d) The data written down as to sight settings and weather conditions while firing at any range are of great assistance in setting the sight correctly when again firing at that range. Where a number of scores have been fired and recorded, the firer should get his sight settings from previous scores fired on days that were similar as to light and wind.

The score book will be kept personally by the rifleman firing. The coach assists him when necessary to decide what to write down, but the coach will neither plot the shots nor enter any data.

Practical Exercises.

Sight-setting and sight-changing exercises:

NOTE.—In these exercises each squad may be handled separately by the corporal, two squads may be grouped under a sergeant, a platoon or small company may be instructed in a single group by one officer, depending on the size of the organization, the facilities at hand, and the number of competent instructors available.

Equipment for each group:

- 1 "A" target mounted on a frame.
- 1 "B" target mounted on a frame.
- 1 "D" target mounted on a frame.
- 10 spotters.

Each man to have a score book and pencil in addition to his rifle.

a. The instructor explains to the assembled group the effect of weather conditions, devoting particular attention to the effect of wind. He cautions the class to disregard all atmospheric influences except wind until long-range firing, 800 yards or over, is taken up.

b. He then calls attention to the wind chart in the score book and explains its use.

c. The instructor reads over and explains the wind rule, the wind-gauge rule, and the elevation rule. By asking questions he assures himself that these rules are understood. He then explains the horizontal and vertical lines in the "model targets" and assures himself that each student understands the use of this diagram. He directs them to use the model target as a guide in target practice.

d. Those under instruction are now placed in pairs, each acting as coach for the other. Both are equipped with a rifle and score book. Every time the sights are set each examines the elevation and windage of the man paired with him and tells the instructor, when called on, the sight setting used.

The instructor tests the ability of the members of the class to set the sights for the first shot by use of the wind chart; and their ability to change the sights intelligently after the first shot by referring to the horizontal and vertical lines on the model targets.

In these tests the instructor uses the full-size A, B, and D targets, with spotters to indicate the position of hits.

Examples.

a. "You are at 500 yards and estimate the wind to be 10 miles at 3.00 o'clock; set your sights for the first shot. Jones, what does Smith's sight read? Smith, what does Jones's sight read? Robinson, what should the sight read? All men whose team mate did not set his sight at $1\frac{1}{4}$ points right windage, hold up their hands." The instructor, by questions and explanations, assists the men who have made mistakes.

The instructor gives a number of examples with the wind at different angles and velocities and at the various ranges until the class thoroughly understands sight setting.

b. "You are 600 yards and estimate the wind to be 10 miles at 9.00 o'clock. Set your sights for the first shot. Suppose you fired and the spotter marked the hit here [placing a spotter in the 4 space near the bull's-eye, at 3.00 o'clock] and you were sure your hold and trigger squeeze were good; change your sight to bring the next shot into the center of the bull's-eye. Johnson, what does Williams's sight read? Snider, what should the sights read? All men whose team mates did not have their sights set at 2 points left windage, hold up their hands."

The instructor assists those men who have made decided errors. Differences of less than $\frac{1}{4}$ point are matters of opinion in applying the rules and are unimportant.

The instructor gives a number of examples which require changes in both windage and elevation, until the principles of sight changing are well understood by the class.

c. Assume the zero of the rifles to be away from the normal both as to windage and elevation and repeat exercises A and B.

d. "Set your sight at 625 yards with $1\frac{1}{2}$ points of left windage. Suppose you fire four shots hitting here [place four spotters in the bull's-eye], and your fifth shot goes here [place spotter on 3 space at 11:00 o'clock]. Jones, what are you going to do now? Jenkins, what are you going to do? You should not do anything to the sights. It is practically certain that you squeezed the trigger improperly and flinched. Not even a very sudden and violent change in the weather or light could cause nearly that much of a difference. Don't try to correct your own faults by changing the sights around."

e. "For your first score in rapid fire at 200 yards you have set your sight at the same elevations and windage that you used in slow fire. Suppose this to be 200 yards elevation and zero windage and your group goes here [putting 10 spotters low and to the left]. Set your sight to bring the next score into the figure. Miller, what does Wright's sight read" etc.

A group in rapid fire should strike the same place as in slow fire. Rapid-fire groups that vary in position from slow-fire groups are due to imperfect trigger squeeze in rapid fire, and consequently these groups are more scattered. Riflemen should endeavor to so squeeze the trigger that the rapid-fire and slow-fire sight settings will be the same. But if there is a constant variation in the sight settings, each should note it in his score book and set his sight in rapid fire so as to make the groups count as much as possible. Groups that are scattered all over the target cannot be corrected by changing the sight.

Score-Book Exercise.

The squad or larger group is assembled in front of a full-sized B target, each man with score book, pencil, and rifle.

The class is divided into pairs. Each man acts as coach for the other man of his pair.

The instructor states the light and weather conditions and the range. He then indicates 10 successive shots on the target by means of a spotter and requires each man to plot each shot as it is indicated, write down the data given from time to time, and make the actual sight settings and corrections on his rifle. Weather and light conditions assumed by the instructor and changes announced during the exercise should be such as are likely to occur on the rifle range.

Example.

"Open your score books at the first blank page, plot your shots and write in your data as I give it to you. Write lightly so you can rub the writing out and use the same page again.

"You are at 600 yards on the rifle range. You are getting ready to fire a slow fire score. There is bright sunlight. The wind varies from 8 to 12 miles an hour in velocity and from 1:00 to 3:00 o'clock in direction. When you are in position ready to fire the first shot, the wind seems steady at 3.00 o'clock and blowing about 8 miles an hour. Write in your data and set your sights. Jones, where has Robinson set his sight? Williams, where has Smith set his sight? You should have a scant point and a quarter of right windage.

"You fire your first shot and the spotter marks it here. (Put spotter a close 4 at 7.00 o'clock.) Decide what you are going to do and set your sights. Dodd, what does McLean's sight read?" etc. "You should have moved your sight about one-fourth a point to the right and raised it 25 yards, so your sight should read 625 yards and a scant $1\frac{1}{2}$ or a strong $1\frac{1}{4}$ of right windage.

"Your second shot goes here (spotter near center of bull's-eye); your third shot goes here (spotter in bull's-eye near the top); your fourth shot goes here (spotter in bull's-eye near the bottom); your fifth shot goes here (close 4 at 9.00 o'clock). The wind seems to be a little stronger, but you are not sure. You think your hold was all right, but you are not absolutely certain. Johnson, what are you going to do? I would take half the correction called for by the model target. Set your sight accordingly. You should have about $1\frac{1}{4}$ points of right windage now. Your sixth shot goes here (a bull's-eye near the edge at 3.00 o'clock). Malone, what are you going to do? The four on the fifth shot must have been due to an error in aim or trigger squeeze, so put your sights back to where they were before ($1\frac{1}{4}$ points).

"Before you fire your seventh shot you notice that the wind has shifted to about 1:00 o'clock but still blowing about the same rate. Wilson, where has Simpson set his sights now?" etc. "Billings, what does the book say about a 1.00 o'clock wind? You need almost half as much windage as for a 3.00 o'clock wind. You should now have almost three-fourths point of right windage. Set your sights there.

"Your next shot goes here (a wide 4 at 6.00 o'clock). Collins, what correction has Brown made for his eighth shot?" etc. "You should have made no change in your sight. Your windage is apparently correct and there has been no change in the conditions. Your low shot was due to a poor aim or a poor trigger squeeze. Don't

try to correct your personal errors by moving your sights around. Your eighth shot goes here (bull's-eye); your ninth shot here (bull's-eye). Your tenth shot goes here (bull's-eye). Write in your notes and exchange books with your team mate. Smith, has Williams plotted all the shots correctly? Read the notes he has written in his book," etc.

The instructor corrects errors and mistaken ideas and makes a note of the men needing extra instruction.

Widely scattered scores cannot be corrected by changing the sight. The fault lies in the man, not in the sight.

FIFTH STEP.

EXAMINATION BEFORE STARTING RANGE PRACTICE.

NOTE.—The answers given herein are merely examples. Students should be required to explain them in their own words.

Q. What is this? [Drawing a circle on the ground or on paper.] A. A circle.

Q. Where is the center of it? A. (Pointing to the center.)

Q. Suppose that circle represents a peep sight which you are looking through and that you are told to bring the top of the front sight to the center of it; where would the top of the front sight be? A. Here. [Pointing to the center of the circle.]

Q. Make a mark in the circle to represent the front sight. Make a small circle to represent the bull's-eye. Is the bull's-eye in the center of the peep sight? A. No; the bottom edge of it is in the center.

Q. Why? A. Because the top of the front sight is in the center and just touches the bottom edge of the bull's-eye.

Q. Should the front sight be held up into the bottom of the bull's-eye? A. No; it just touches the bottom edge of the bull's-eye, so that all of the bull's-eye can still be clearly seen.

Q. What is this? [Indicating sighting bar.] A. Sighting bar.

Q. What is it for? A. To teach men how to aim.

Q. Why is it better than a rifle for this purpose? A. Because the sights on it are much larger and slight errors can be more easily seen and pointed out.

Q. What does this represent? A. The front sight.

Q. And this? A. The rear sight.

Q. What is this? A. The eyepiece.

Q. What is it for? A. To make a man hold his head in the right place, so that he sees the sights properly aligned.

Q. Is there an eyepiece on a rifle? A. No; a man learns by the sighting bar how the sights look when properly aligned, and he must hold his head so as to see the sights the same way when aiming a rifle.

Q. How does he hold his head steadily in this position when aiming the rifle? A. By pressing his cheek firmly against the side of the stock.

Q. Where do you focus your eye when aiming a rifle? A. On the bull's-eye.

Q. Tell me what is wrong with these sights. [The instructor now adjusts the sights of the bar making various slight errors; first, with sights pointing at a blank wall or paper to show the correct and incorrect adjustments of the sights, and then, with the sights properly adjusted, he sights on a small bull's-eye to demonstrate correct and incorrect aiming, requiring the man to point out any errors.]

Q. What is the difference between the way you aim with peep sight and the way you aim with an open sight? A. There is no difference. In both, the top of the front sight is brought to the center of the circle. With the open sight the top half of the circle is omitted, making it look as if the top half had been cut off and removed.

Q. Now, take this sighting bar and point it at that blank paper and adjust the sights properly. [Verified by the instructor.]

Q. Now that the sights are properly adjusted have the small bull's-eye moved until the sights are properly aimed at it. [It is easier to move the small bull's-eye on a disk to the proper place than to try to adjust the sights on a fixed bull's-eye.]

Q. How do you squeeze the trigger? A. I squeeze it with such a steady increase of pressure as not to know just when the rifle will go off.

Q. What do you know while you are squeezing the trigger? A. I know that the sights are lined upon the bull's-eye.

Q. If the sights are slightly out of alignment what do you do? A. I hold the pressure I have on the trigger and only resume the increase of pressure when the sights become lined upon the bull's-eye again.

Q. If you do this, can your shot be a bad one? A. No.

Q. Why? A. Because I cannot flinch, for I do not know when to flinch, and the sights will always be lined up with the bull's-eye when the rifle goes off, because I never increase the pressure on the trigger, except when they are properly lined up.

Q. Is it necessary to take a long time to press the trigger in this way? A. No, I press it in the same way in rapid fire. The increase of pressure is faster in rapid fire, but it is so steady that I do not know just when the rifle is going off.

Q. What is this? A. An aiming device.

Q. What is it used for? A. To show the instructor how a man is aiming.

Q. Now, I will take this rifle, and with the aid of the sandbag rest to hold the rifle steady I will aim at the bull's-eye, and you will watch the sights through the aiming device and tell me when my aim is right and when it is wrong, and what the error is when wrong. [The instructor now aims so as to illustrate the common faults and the man must observe and call attention to them.]

Q. I will now snap at a bull's-eye a few times and you will watch through the sighting device and call where the shots would have hit.

Q. Now, take this rifle and, using the sandbag rest, aim at the bull's-eye, and I will watch you through the aiming device. [The instructor satisfies himself that the man understands sighting and aiming and requires him to snap a few times and to call his shots.]

Q. I will take the rifle and assume the kneeling, sitting, and prone positions, and position with sandbag rest, and you will tell me whether the position is correct or incorrect in each case. [The gun sling is adjusted in all these tests.]

Q. Take this rifle and show me your kneeling, sitting, and prone positions, and position with sandbag rest.

Q. Now show me how you take the sitting, kneeling, and prone positions rapidly from a standing position.

Q. In rapid fire how do you gain time so as not to be compelled to hurry in aiming and squeezing the trigger? A. I gain time by taking the position rapidly, working the bolt rapidly, and by keeping my eye on the target while working the bolt.

Q. How does keeping your eye on the target help you to gain time? A. A man who looks into the chamber while working the bolt always works it slowly so as to see the cartridges enter the barrel and he loses time in finding his own target again.

Q. What other fault, in rapid fire, comes from looking into the chamber while working the bolt? A. Firing on the wrong target.

Q. Show me how you work the bolt in rapid fire, prone, sitting, and kneeling.

Q. Now show me how you load a clip of service ammunition into the magazine.

Q. Is it important to get into the correct position before beginning to shoot in rapid fire? A. Yes; even though it takes more time, I should always get into the correct position before beginning to shoot.

Q. How do you breathe while aiming? A. After I get my sights lined up on the bull's-eye I draw in an ordinary breath and hold it while aiming and squeezing the trigger.

Q. Take the prone position and aim and snap at that mark. [The instructor must assure himself that the man knows how to hold his breath properly while aiming. Many men have great difficulty in learning to do this correctly.]

Q. What is meant by "calling the shot?" A. To say where you think the bullet hit as soon as you shoot and before the shot is marked.

Q. How can you do this? A. By noticing exactly where the sights point when rifle goes off.

Q. If a man can't call his shot properly, what does it usually indicate? A. That he did not squeeze the trigger properly and did not know where the sights pointed at the time the rifle went off.

Q. What is this? A. A score book.

Q. What are these lines for? A. To show the amount of change in elevation necessary to bring the shot to the middle line.

Q. What are these lines for? A. To show the amount of change in windage necessary to bring the shot to the middle line.

Q. If a shot hits here [indicating] what change in your sights would you make to bring the next shot to the center of the bull's-eye?

Q. What effect does moving your rear sight have on the shot? A. It moves it in the same direction as the rear sight moves.

Q. If you want to make the shot hit higher, what do you do? A. I raise my rear sight.

Q. If you want to make your shots hit more to the right what do you do? A. I move my rear sight to the right.

Q. If you move your rear sight one point of windage, how much will it move the point struck by the bullet? A. Four inches for each 100 yards of range.

Q. Explain what you mean by that.

Q. I will place this spotter on this target (full size 500-yard target) to represent a shot properly fired by you at 500 yards with zero windage and sights set at 500 yards. Take your rifle and move your sights to bring the next shot to the center of the bull's-eye. [Instructor now tests in various ways the man's ability to make proper sight corrections.]

Q. What are the three principal uses of the score book? A. To show me where my shot group is located, to indicate how much change in the sights is necessary to move a shot or group of shots to the center of the target, and to make a record of the sight settings of my rifle for the different ranges under various weather conditions so that I will know where to set my sight when starting to shoot at each range under different weather conditions.

Q. Tell me what effect different light and weather conditions have on a man's shooting.

Q. In firing at ranges up to and including 600 yards what is the only weather condition for which you make sight corrections? A. Wind.

DUTIES OF COACH, GALLERY AND RANGE PRACTICE.

Coaching.

Every step in rifle marksmanship instruction and rifle firing on the range must be carefully coached. The object of coaching was described in the first of this subject. Good shooting is a matter of instruction rather than practice. Since each student alternates as firer and coach he is not playing a square game with his teammate unless he fulfills his duty as a coach properly. In each step of the preparatory instruction as well as on the range, a coach has certain well-defined duties to perform. They are given in the practical exercises and are again listed below.

Duties of Coaches in the Five Steps.

First Step (Sighting and Aiming).

1. To arrange sighting bar and to demonstrate the normal sight.
2. To adjust sighting bar with errors.
3. Take proper position in sighting with the rifle rest and show normal sight.
4. Verify alignments of sights of student under instruction.
5. Adjust slight errors and have student correct them.
6. To correct errors in triangulation exercises after each triangle.

Second Step (Positions). See that the following points are observed:

1. That the sling is properly adjusted.
2. That the proper position is taken and sandbag if used is properly adjusted.
3. That the slack is taken up promptly.
4. That the aim is correct.
5. That the breath is held while aiming.

Third Step (Trigger Squeeze):

1. That the above five points are carried out.
2. That the trigger is squeezed properly.
3. That the shot is called.

Fourth Step (Rapid Fire):

1. That the firer properly adjusts his sling.
2. That his position is correct.
3. Take the proper position for coaching.
4. See that he takes up the slack promptly.
5. Watch his eye to see if he flinches.
6. See that he works the bolt rapidly and smoothly.
7. See that he keeps the rifle and his elbows in position.
8. See that he keeps his eye on the target.
9. Note method of reloading when magazine is empty.

Fifth Step (Final Examination.)

Question your teammate to the best of your ability, covering every point carefully and faithfully.

Position of Coaches.

The coach takes the same position as the firer (prone, sitting, kneeling or standing), but he must watch the firer and not the target.

In the prone position, lie on the right side facing the firer, right hand supporting the head. (See Plate 130.)



PLATE 130.—The Position of a Coach.

Watch his eye, for by doing so you can detect trigger squeeze errors which are the most serious and also the hardest to correct. If his eye closes as the rifle goes off, it shows that he knew it was going off and did not squeeze the trigger properly. The explosion and the shock will cause the eye to wink but this is barely perceptible.

Action of Coaches.

If the firer is flinching or shooting poorly, check his aim with the aiming device. If this is alright, have the firer turn his head while you mix dummy cartridges in with the live rounds. (The range dummies appear the same as the ball cartridges with the exception of a small hole bored in the side through which the powder has been removed.) If the firer is flinching, when he comes to the dummy cartridge the flinch will be indicated by his shoving the shoulder forward to meet the shock of the expected explosion.

It is sometimes necessary to squeeze the trigger for the firer, to show him his error. To do this, the coach lies with his right elbow on the ground to steady his hand. (See Plate 131.) He next places his thumb against the trigger and his

first finger in rear of the trigger guard. The firer holds his breath as usual, the coach watches his back and between 5 to 10 seconds after the firer begins to hold his breath, the coach applies enough pressure, by pinching his forefinger and thumb, to discharge the rifle.

When a firer appears not to be flinching, but is still doing poor shooting, the coach will watch to see that he is holding his breath properly (watch the small of

PLATE 131.—Coach Squeezing the Trigger.

his back); check his sights with the aiming device and check all other points carefully.

A coach must use patience so as not to excite or confuse the firer. Encourage, commend and take plenty of time with the beginners. The coach must not keep the firer's score book for him. Let him do this, show him how, if necessary, but make him plot his own shots. Consult the score book often to see where his shot group is going. Last of all, **WATCH THE FIRER AND NOT THE TARGET.**

Gallery Practice.

Gallery practice follows the preparatory instruction and precedes the range firing when possible. It is the same as the trigger squeeze exercise except that gallery practice ammunition is used. Gallery practice may be held outdoors or indoors, the former is the more preferable.

If held outdoors, the rifle with which the man is armed is used with gallery practice ammunition. This cartridge is accurate up to 100 yards. The course fired is the same as Course C (See Appendix). Where a range of 100 yards is not obtainable, targets L-75 and L-50 for ranges of 75 and 50 feet respectively are used.

If held indoors, the 75 and 50 foot ranges are the most common. The rifle with gallery practice ammunition or the .22 caliber rifle is used on these targets at the above ranges. Whether held indoors or outdoors, the firing begins with slow fire, in the prone position, with the sandbag rest. All beginners should be carefully coached at all times. The same precautions for safety should be taken here as when firing on the range. The purpose of this practice is:

1. To note errors in position, use of sling, aiming and holding breath.
2. To give additional instructional in the above points.
3. To give instruction and practice in trigger squeeze.
4. To determine the weak points and to correct them before going on the range.

RANGE PRACTICE.

General Provisions.

This is the actual firing of the rifle and is identical with the trigger squeeze exercise, except that ball ammunition is used. Every one firing, if in good health, should

make an average score of 40 or better. If this is not obtained it is probably due to poor instruction, faulty coaching or both. Every firer is coached at all times throughout the shooting. The courses fired (the ranges fired at) and the targets used are described in detail in the appendix. Course "A" is fired whenever the facilities permit.

Pads.

During firing on the range, pads should be worn on the shoulder and elbows for the first few days at least. After a short while the muscles become hardened to the firing, especially with a physically mature man, and the pads are not so essential, but it is a good plan to wear them throughout the range practice. A pad can be easily improvised from woolen socks, gloves, towel, or some similar article, folded and placed under the shirt to protect the shoulder and arm. However we advise every student to use a pad especially made for shooting.

Examination of Rifles.

Before going to the range all rifles should be tested with gauges, fitted with a number 6 peep sight (or larger). All screws should be tight, front and rear sights tightened, the upper band should be loose enough to slide on and off easily when the screw is removed. The trigger squeeze should not be less than 3 pounds and there should be no creep in the trigger. (Creep is any movement felt in the trigger after the slack has been taken up and before enough pressure has been applied to discharge the piece.) All unserviceable rifles should be replaced.

General Hints and Cautions.

1. Do not be afraid of the kick, it is more imaginary than real. This is especially true when the sling is properly used, the shoulder padded and the rifle properly held.
2. Rest your cheek, not your jaw bone, firmly against the stock.
3. Blacken your sights, front and rear, being careful to wipe off all oil and dirt and to remove the front sight cover first.
4. Set the sights and have them inspected before you go to the firing point.
5. Keep the bolt open at all times on the range except when actually firing. Keep the rifle pointed towards the target when loaded.
6. Keep the muzzle off the ground. Never put anything in the muzzle.
7. Always aim at the bottom edge of the bull's-eye. Never change your aiming point to make a bullet hit closer to the bull's-eye. Change your rear sight.
8. Do not change the sights unnecessarily. Unless two shots go very near the same place the fault is with you and not the sights.
9. Do not change the windage until after looking in the score book to see how much change you need. Examine the wing-gauge before you make any changes.
10. Take your score book to the firing point and use it faithfully, plot all shots and watch your shot group. Try to bring the center of this group into the center of the bull's-eye.
11. Get comfortable before firing, insist on good coaching, watch the trigger squeeze, call each shot.
12. Clean the rifle carefully each day.

Final Word.

Good shooting is a matter of instruction rather than practice. Unless the points covered in this subject are absorbed, the chances of becoming a good shot are small indeed. Nothing will afford greater pleasure than the first time a perfect score results. Try for nothing less.

REGULATIONS AND MISCELLANEOUS SUBJECTS.

The Courses to be Fired.

Civilians. Reserve officers' training corps units except coast artillery corps units and civilian rifle clubs will fire Course A, if range facilities permit. Where range facilities are not available for Course A, Course B will be fired. If only a 100-yard range is available, Course C will be fired. Coast artillery units of the reserve officers' training corps will fire Course D when range facilities permit.

Course A.

Instruction practice:

TABLE I.—SLOW FIRE.

Range	Time	Shots	Target	Position
200.....	No limit	10	A	Prone with sandbag.
300.....	....do	10	A	Do.
500.....	....do	10	B	Do.
600.....	....do	10	B	Do.

TABLE II.—SLOW FIRE—TO BE FIRED TWICE.

Range	Time	Shots	Target	Position
200.....	No limit	10	A	Prone without sandbag.
300.....	....do	10	A	Do.
500.....	....do	10	B	Do.
600.....	....do	10 2 s. s. ¹	B	Do.

¹ Two sighting shots (2 s. s.) will be fired at 600 yards.

TABLE III.—SLOW FIRE.

Range	Time	Shots	Target	Position
300.....	No limit	10	A	Sitting.
300.....	....do	10	A	Kneeling.
200.....	....do	10	A	Standing.

TABLE IV.—RAPID FIRE.

Range	Time Limit	Shots	Target	Position
200.....	1 minute	10	D	Sitting or kneeling from standing.
300.....	1 minute, 10 seconds...	10	D	Prone from standing
500.....	1 minute, 20 seconds...	10	D	Prone.

Each 10 shots in Table IV are to be fired in two scores of two clips each, the clips in each case to contain range dummies and loaded cartridges mixed. After Tables I, II, III, and IV have been fired such additional practice will be held as time and ammunition allowance will permit. It is best to alternate slow and rapid fire at the ranges and in the positions laid down for the record course. Usually more rapid-fire practice is needed than slow-fire practice.

The firing of rapid-fire scores with mixed range dummies will not be limited to the first time over the course. This form of practice is excellent training and should be carried on until a few days before firing the record course. It is good instruction to precede each full score of 10 loaded cartridges by a score of two clips in which 5 range dummies and 5 loaded cartridges are mixed.

The instruction practice prescribed in Tables I, II, III, and IV need not be followed rigidly when unusual local conditions make a change advisable in the opinion of the officer in charge of the firing. The general plan as outlined in these tables will, however, be followed.

Record practice:

TABLE V.—SLOW FIRE.

Range	Time Limit	Shots	Target	Position
200.....	No limit	10	A	Standing.
300.....	....do	10	A	5 sitting, 5 kneeling.
500.....	....do	10	B	Prone.
600.....	....do	2 s. s. ¹	B	Prone with sandbag.
		10		

¹Two sighting shots will be fired at 600 yards.

TABLE VI.—RAPID FIRE.

Range	Time Limit	Shots	Target	Position
200.....	1 minute	10	D	Sitting or kneeling from standing.
300.....	1 minute, 10 seconds...	10	D	Prone from standing
500.....	1 minute, 20 seconds...	10	D	Prone.

Qualification. All who make 293 or over on the record course are qualified as expert riflemen, 275 or over as sharpshooters, 240 or over as marksmen. All who make under 240 are classed as unqualified.

The qualification as expert rifleman, sharpshooter, or marksman is held for one year.

Recruits and men who did not fire in the regular season's practice but who fire in the supplementary season hold the qualification attained for one year, unless they increase their qualification during the next regular season's practice.

Qualification increased in the regular season's practice goes into effect on the date on which made, as does also qualification equal to that already held.

Decreased qualification made in the regular season's practice takes effect on the date on which the previous qualification expires, but remains in effect only for a year from the date on which made.

Any qualification attained after the previous qualification has expired takes effect on the date on which it is made.

Long-range practice. After an organization has completed record firing in Course A, men who have qualified as expert riflemen will take the long-range practice.

The course will be fired at least three times, twice as instruction practice and once for record. In order to obtain the maximum instruction in the effects of weather conditions the course will not be fired more than once on any one day. Long-range practice need not be fired during the target-practice season, but may be fired at any time before the end of the target year.

TARGET C.—SLOW FIRE.

Range	Shots	Position
800.....	10	Prone.
1,000	10	Prone.

Two sighting shots will precede each score of 10 shots.
This practice will be conducted as prescribed for slow fire.
Instruction will be given in the effect of wind, light, and temperature, and the value of small changes in elevation and windage at long ranges.
Long-range firing does not effect a soldier's qualification, but a record of the scores made will be included in the company target report.
For engineers this practice will be held at the discretion of the battalion commander.

Course B.

Instruction practice:

TABLE I.—SLOW FIRE—TO BE FIRED THREE TIMES BEFORE PROCEEDING WITH TABLE II.

Range	Time	Shots	Target	Position
200.....	No limit	10	A	Prone with sandbag.
200.....	....do	10	A	Prone.

TABLE II.—SLOW FIRE.

Range	Time	Shots	Target	Position
200.....	No limit	10	A	Sitting.
200.....	....do	10	A	Kneeling.
200.....	....do	10	A	Standing.

TABLE III.—RAPID FIRE.

Range	Time	Shots	Target	Position
200.....	1 minute	10	A	Prone.
200.....	....do	10	A	Sitting.
200.....	....do	10	A	Kneeling.

Each 10 shots in Table III are to be fired in two scores of two clips each. The clips in each case to contain range dummies and loaded cartridges mixed.
After Tables I, II, and III have been fired, such necessary additional practice will be held as time and ammunition allowance permit.

Record practice:

TABLE IV.—SLOW FIRE.

Range	Time	Shots	Target	Position
200.....	No limit	10	A	Prone.
200.....	....do	10	A	5 kneeling, 5 sitting.
200.....	....do	10	A	Standing.

TABLE V.--RAPID FIRE.

Range	Time	Shots	Target	Position
200.....	1 minute	10	A	Prone from standing
200.....	....do	10	A	Kneeling or sitting from standing.

Qualification. All making 195 or over are qualified as sharpshooter ; all making 175 or over are qualified as marksman.
The badges for qualification in Course B are bronze.
The rules governing record practice in Course B are the same as for Course A.

Course C.

General provisions. To be fired by reserve officers' training corps units and civilian rifle clubs where ranges for Courses A or B are not available.
In firing Course C any rifle may be used either with full service or reduced load ammunition, except that palm rests or set triggers are not permitted. Telescopic sights may be used.
The course is the same as Course B except that the range is 100 yards and target L is used.
Any man making 400 or over is qualified as sharpshooter.
Any man making 370 or more is qualified as marksman.
The badges for qualification in Course C are bronze.
With the exception of the arms which may be used, as noted above, the rules governing record practice in Course C are the same as for Courses A and B.

Course D.

Instruction practice:

TABLE I.—SLOW FIRE—TO BE FIRED TWICE.

Range	Time	Shots	Target	Position
200.....	No limit	10	A	Prone with sandbag.
300.....	....do	10	A	Prone with sandbag.

TABLE II.—SLOW FIRE—TO BE FIRED TWICE.

Range	Time	Shots	Target	Position
200.....	No limit	10	A	Prone.
300.....	....do	10	A	Prone.

TABLE III.—SLOW FIRE.

Range	Time	Shots	Target	Position
200.....	No limit	10	A	Standing.
300.....	....do	10	A	Sitting.
300.....	....do	10	A	Kneeling.

TABLE IV.—RAPID FIRE.

Range	Time	Shots	Target	Position
200.....	1 minute	10	A	Sitting or kneeling from standing.
300.....	1 minute, 10 seconds...	10	A	Prone from standing.

Each 10 shots in Table IV are to be fired in two scores of two clips each, the clips in each case to contain range dummies and loaded cartridges mixed.

After Tables I, II, III, and IV have been fired, such necessary additional practice will be held as time and ammunition allowance permit.

Record practice:

TABLE V.—SLOW FIRE.

Range	Time	Shots	Target	Position
200.....	No limit	10	A	Standing.
300.....	....do	10	A	5 sitting, 5 kneeling.
300.....	....do	10	A	Prone.

TABLE VI.—RAPID FIRE.

Range	Time	Shots	Target	Position
200.....	1 minute	10	A	Sitting or kneeling from standing.
300.....	1 minute, 5 seconds....	10	A	Sitting or kneeling from standing.
300.....	1 minute, 10 seconds...	10	A	Prone from standing.

Qualification. All who make 251 or over on the record course are qualified as expert riflemen, 236 or over as sharpshooters, 206 or over as marksmen. All who make under 206 are classed as unqualified.

The qualification as expert rifleman, sharpshooter, or marksman is held for one year.

The badges shall be the same as for qualification in Course A.

Scoring Slow Fire.

The scorer, as each shot is signaled, will announce in a tone loud enough to be heard by the firer the name of the firer and the value of the hit, and will record it on a sheet or card assigned to that soldier.

A shot upon the wrong target will be entered upon the score of the man firing as a miss, no matter what the value of the hit upon the wrong target.

If two shots strike a target at the same or nearly the same time, both will be signaled; and if a shot was just fired from the firing point assigned to that target, the hit having the higher value of the two will be entered in the score of the soldier firing from that target point. No record made of the other hit.

Scoring Rapid Fire.

In rapid fire as each shot is signaled it is announced as follows: "One five, two fives, three fives, one four, two fours, three fours, four fours, one three one miss, two misses," etc., and noted on a pad as called, the scorer watching the target as he calls the shot. After the marking is finished the scorer counts the number of shots marked and, if more or less than 10, calls: "Re-mark No." If 10 shots have been marked, he then enters the score on the soldier's score card and totals it as follows: 5 5 5 4 4 4 4 3 0 0 = 34.

TARGETS AND RANGES.

Target A.

The short-range target, used for 200 and 300 yards, is a rectangle 6 feet high, 4 feet wide. Black circular bull's-eye 10 inches in diameter, value of hit, 5; center ring, 26 inches in diameter, value of hit, 4; inner ring 46 inches in diameter, value of hit, 3; outer, remainder of target, value of hit, 2.

Target B.

The mid-range target, used for 500 and 600 yards, is a square 6 feet on a side, black circular bull's-eye 20 inches in diameter; center ring, 37 inches in diameter;

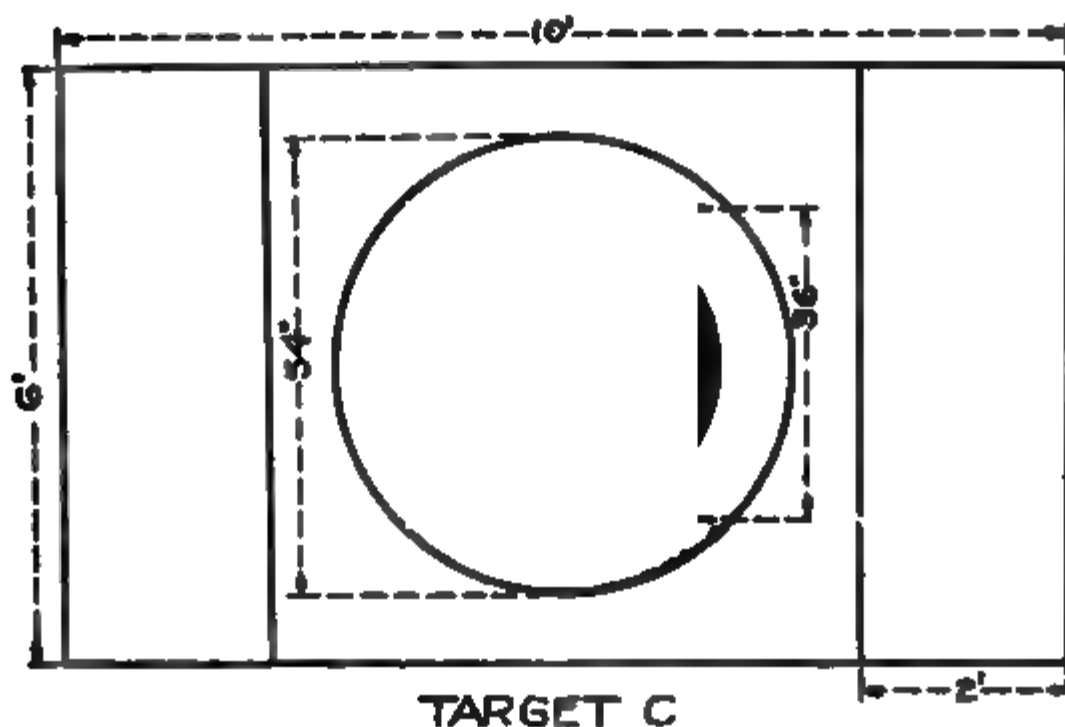
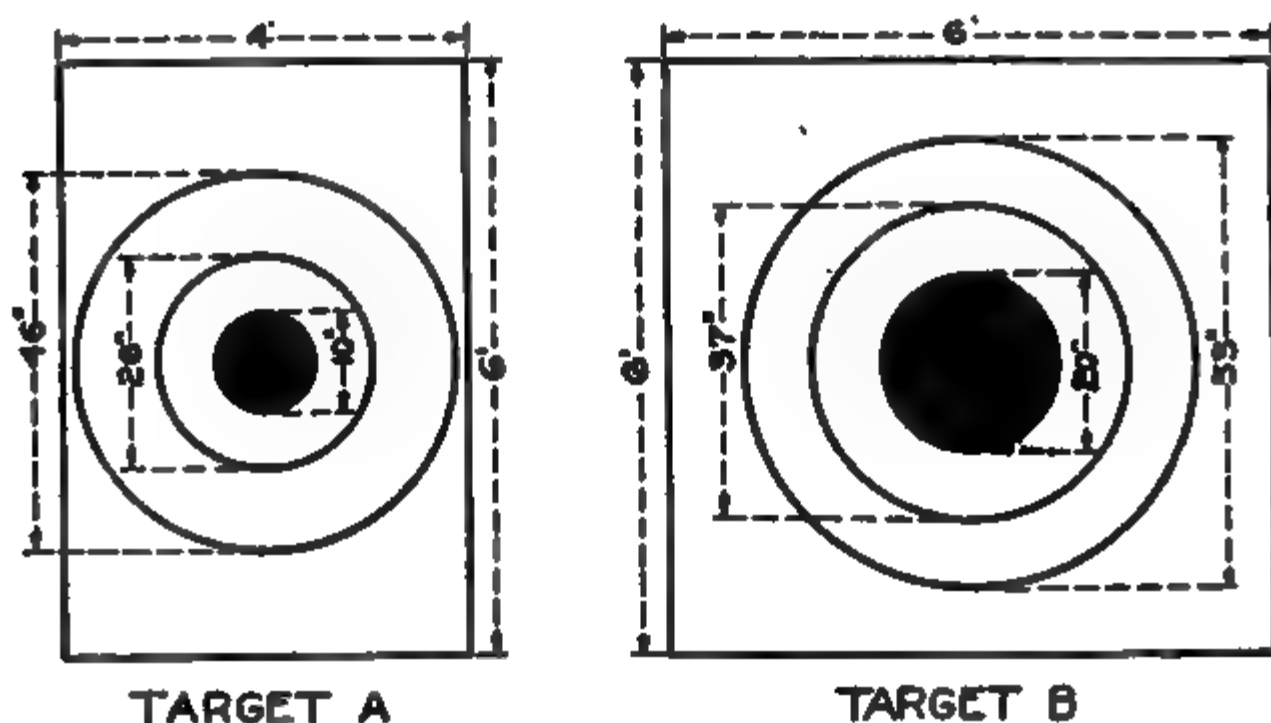


PLATE 132.—Target A; target B; target C.
RANGES.

inner ring, 53 inches in diameter; outer, remainder of target. Value of hits, same as on target A.

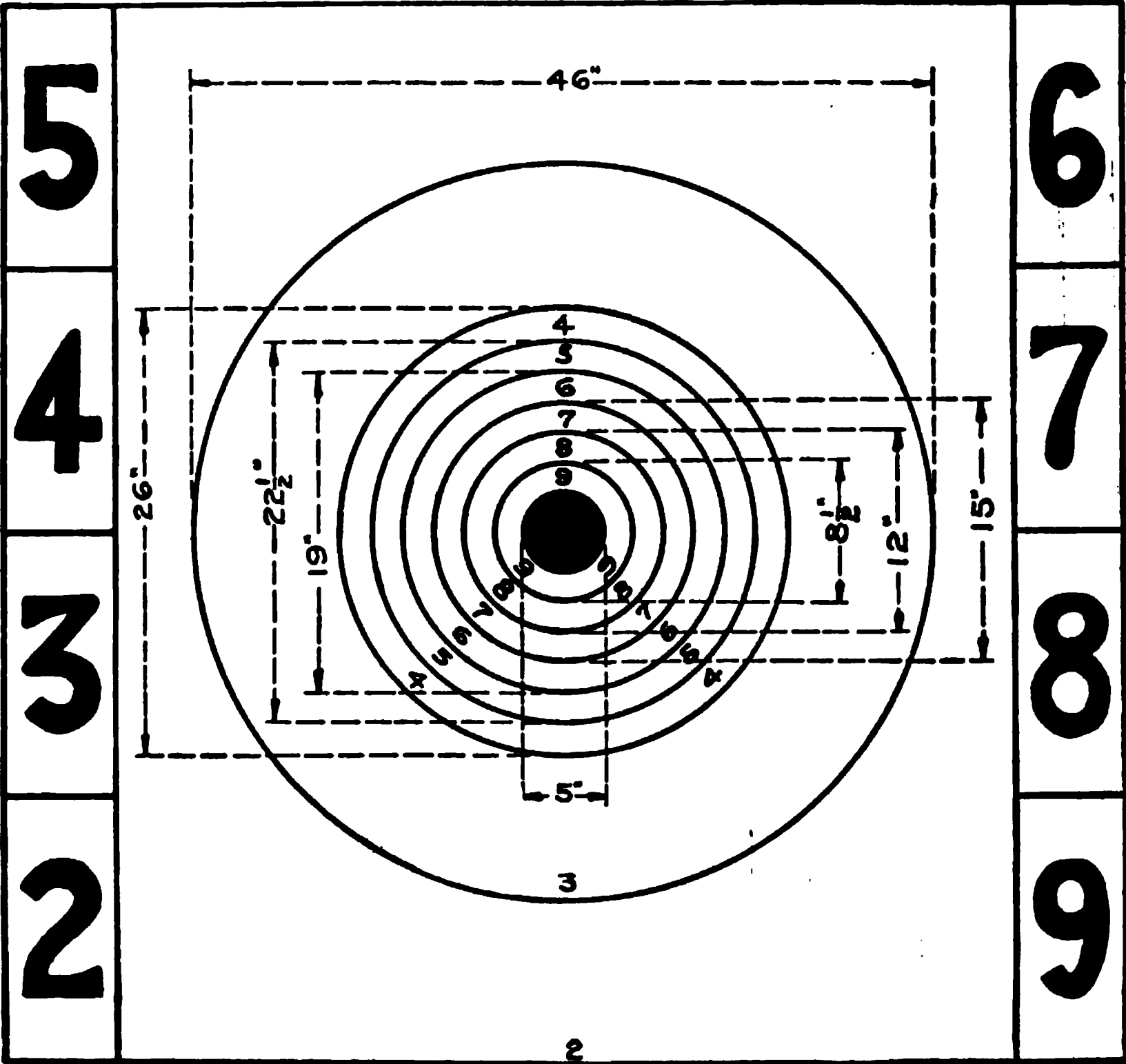
Target C.

The long-range target, used for 800 and 1000 yards. It is a rectangle 6 feet high and 10 feet wide. Black circular bull's-eye 36 inches in diameter; center ring, 54 inches in diameter; inner space outside of center ring bounded by vertical lines

2 feet from each end of target ; outer, remainder of target. Value of hits, same as on target A.

Target D.

The rapid-fire target. A black silhouette representing a soldier in the prone position placed in the middle of a rectangular target 6 by 6 feet. Value of hits in the figure, 5; in the space (within parallel to figure, 4 inches in width above and at sides of figure, 14 inches below figure) immediately outside the figure, 4; in the space immediately outside the 4 space, 3; remainder of the target, 2.



TARGET L

No. 1.

PLATE 133.—Target L.

Target L.

A rectangle 6 feet high and 4 feet wide, with black circular bull's-eye 5 inches in diameter. Value of hit therein, 10. Seven rings with diameter as follows:

	Value of Hit
1. 8½ inches	9
2. 12 inches	8
3. 15½ inches	7
4. 19 inches	6
5. 22½ inches	5
6. 26 inches	4
7. 46 inches	3
8. Outer, remainder of target.....	2

Target L is used in Course C and in gallery practice at 100 yards.

Gallery Targets.

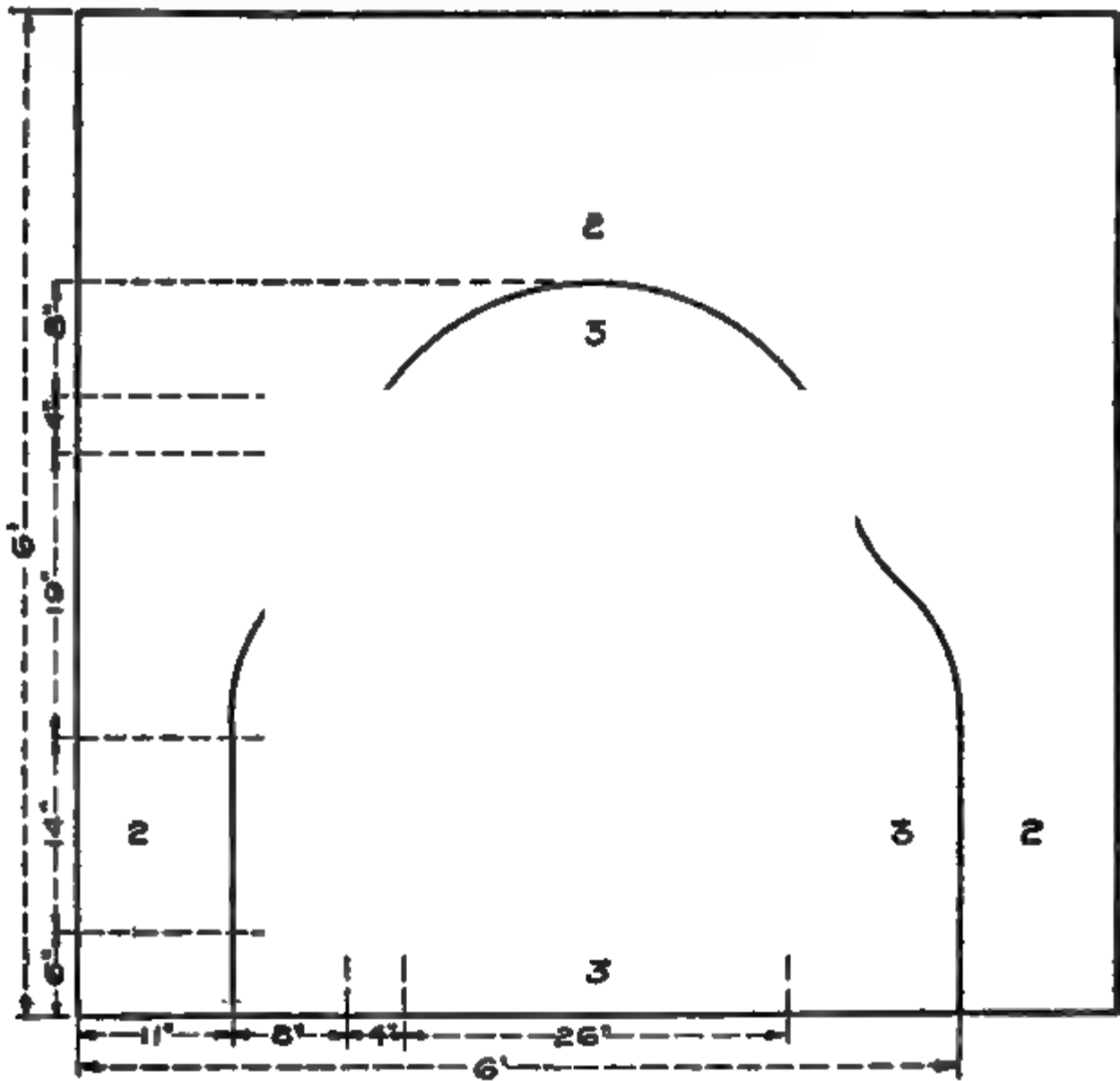
These targets are proportionate reductions of the L target for firing at close ranges.

Gallery target L-75, for firing at 75 feet, is one-fourth the size of target L.

Gallery target L-50 for firing at 50 feet, is one-sixth the size of target L.

Classes.

There are two classes of ranges: Class A ranges, which are more or less limited in extent and which are equipped for known distance practice ; class B ranges, which are of extended area and diversified terrain, and which are used for combat firing.



TARGET D
No. 2.
PLATE 134.-Target D.

CHAPTER IV.

MILITARY COURTESY.

1. Military courtesy is nothing more than certain accepted forms of politeness recognized and used by military men. The civilian world has its standards and requirements that are expected of a gentleman and with which the R. O. T. C. student is familiar. However, by joining the R. O. T. C., the student, when in uniform will be expected to conduct himself in such a way as to comply with the military code of courtesy. By doing so, he will evidence his character and training



PLATE 135.



PLATE 136.

and by failing to do so he will reflect little credit on himself and his military training. Military courtesy, like civilian courtesy, is nothing more than a manifestation of politeness, loyalty and patriotism, three virtues every gentleman must possess.

Saluting.

2. The military salute is universal. It is an old custom. It is merely a courteous recognition between two individuals in the same honorable profession. It does not imply servitude or inferiority as some Americans seem to think. Regulations require that it be rendered by both the senior and the junior, as bare courtesy requires between gentlemen in civil life. It is the military equivalent of the civil-

ian's expression, "Good morning," or "How do you do?" Therefore be careful about your saluting. Be proud of the manner in which you execute your salute and make it indicative of discipline, politeness, good breeding and self-respect. The junior salutes first. Saluting distance is that within which recognition is easy.

Observe the following general rules about saluting:

- a. Salute all officers of the Army, Navy, Marine Corps and of the Militia and Officers' Reserve Corps in uniform. Do not salute non-commissioned officers. For it is not the individual but the rank of the individual that we salute.
- b. Do not salute while seated.
- c. Look at the person you are saluting.
- d. Never salute while the left hand is in the pocket or with a cigarette, cigar or pipe in the mouth.

PLATE 137.

- e. Never salute with the left hand.
- f. Never salute an officer while you are in ranks. In ranks you merely obey commands. If addressed while in ranks by an officer, come to attention if standing "At Ease" or "At Rest" and reply but do not salute.
- g. Indoors (in your tent), unarmed, do not salute, but uncover and stand at attention, upon the entrance of an officer. If he speaks, then salute as though you were covered.
- h. Indoors, armed with the rifle, render the prescribed salute, *i. e.*, the rifle salute at order arms or at trail. (See Plate 135.)
- i. Outdoors, armed with the rifle, render the prescribed salute, *i. e.*, the rifle salute at right shoulder arms. (See Plate 136.)
- j. Outdoors, unarmed, or armed with side arms,¹ salute with the right hand. (See Plate 137.)

¹ A soldier is armed with side arms when he is without his rifle, but has on his belt and bayonet.

k. Salute when the person you are saluting is six paces away from you, and when the salute has been acknowledged, or the officer has passed, lower the hand quickly to the side.

l. Do not salute while running or moving at double time, but come to quick time before you salute.

m. When an officer enters a room in which there are several soldiers, the command ATTENTION is given by the first one to perceive him. All rise and stand at attention until the officer leaves the room. If the command ATTENTION is given during a meal do not rise but cease eating and sit at attention.

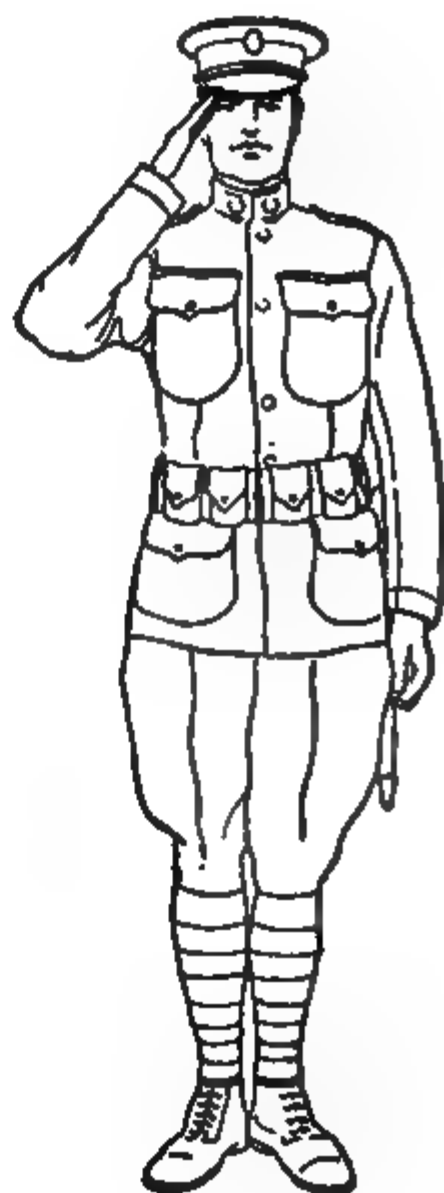


PLATE 138.
Outdoors, Armed with Rifle.

PLATE 139.
Sentinel on Post.

PLATE 140.
Outdoors, Unarmed.

n. When an officer approaches several soldiers out of doors, the command ATTENTION should be given by the first to perceive him. All stand at attention and salute.

o. Soldiers riding in wagons or automobiles salute all officers passed. A soldier driving a wagon or automobile should salute unless both hands are occupied.

National Anthem.

3. When the National Anthem ("Star Spangled Banner") is played, rise, face the music, stand at attention, and salute as follows:

If in uniform, come to the position of salute at the first note of the anthem and retain that position as shown in Plates 138, 139 and 140, until the last note.

If you are in civilian clothes, salute as shown in Plates 141 and 142. Call your father's and mother's attention to these illustrations. Notice that the man's head-

dress is opposite the left shoulder. During rainy weather the head-dress may be slightly raised so as to protect the head. Ladies merely rise and remain silent while the National Anthem is being played.

The same saluting rules apply when "To the color" or "To the standard" is sounded, as when the National Anthem is played.

At retreat when the National Anthem or "To the color" or "To the standard" is played, you should, while saluting, face the flag instead of the music. "To the color" is the air that is blown on the bugle at retreat (close of day) while the flag is being lowered, in case the band is not present.

How to Salute the Flag.

4. Our flag is the emblem of our country's sovereignty, dignity and ideals. It should be saluted. The *red* in it stands for *courage*, the *white* for *liberty*, and the *blue* for *loyalty*. When you salute our flag you give evidence of your allegiance to the country that stands for freedom and equality in every sense of the word. When you fail to salute it, you give evidence of your ignorance or disloyalty.

Our flag consists of 13 red and white stripes (one for each of the 13 original states) and 48 white stars (one for each state in the union).

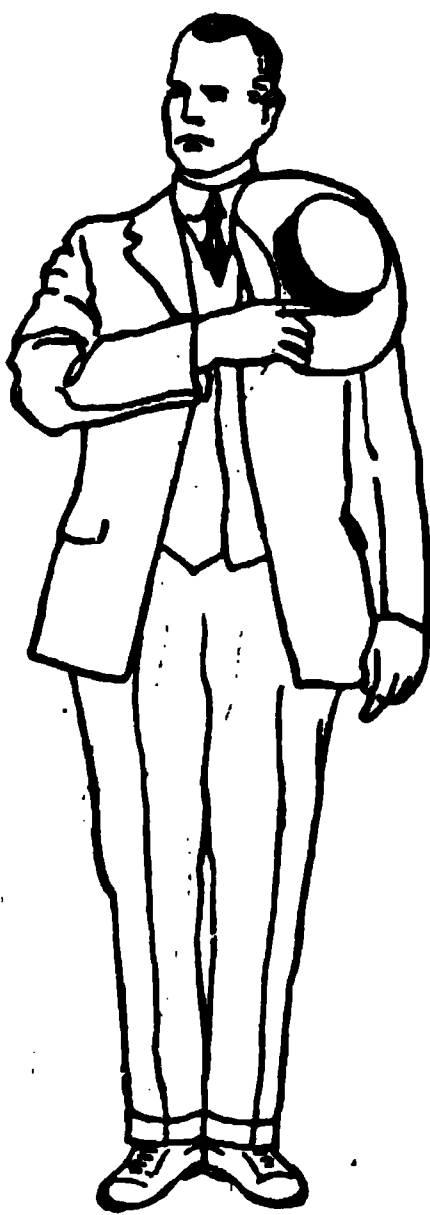


PLATE 141.
Fair Weather.



PLATE 142.
Rainy Weather.

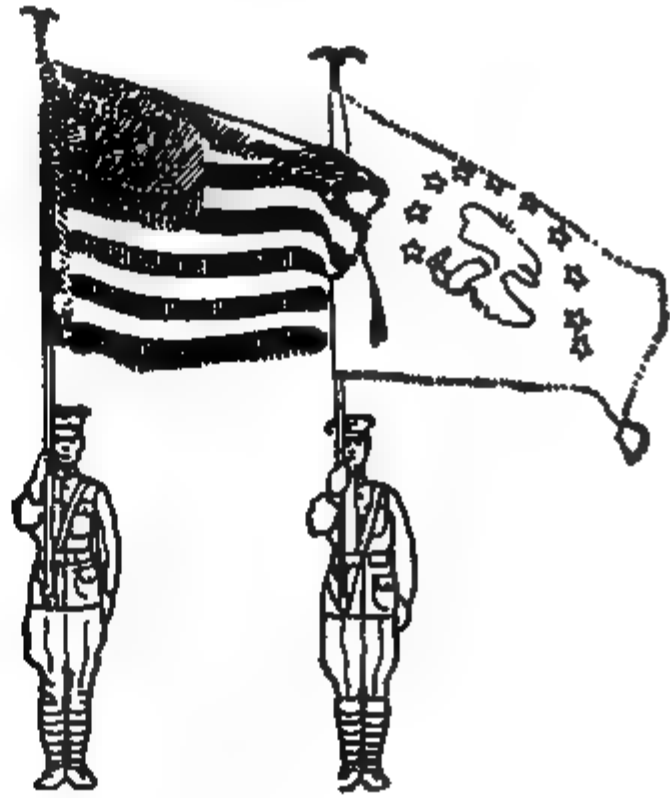
Do not salute every piece of red, white and blue bunting you see, but be exceedingly careful to salute the two flags that you see nearest the flag staff in Plate 143.

The flag on the left, attached to the flag staff is the National Flag. This flag flies on a flag staff from sunrise to sunset at all army posts and camps. The flag in the center is called the "National Color." The flag on the right is called the "Regimental Color." Together these last two flags are called the "Colors."¹ The National Color is always on the right. It should be saluted.

Each regiment has such a set of colors. The battalion carries only the National Color. The colors of mounted troops are called "Standards."

You should show the same mark of respect to the flag and the National Anthem of foreign countries with whom we are at peace as you do to your own flag and National Anthem.

¹ Colors are distinguished from flags in that they are carried and accompany troops, while the latter fly from buildings and flag poles.



National
Flag.

PLATE 143.
National
Color.

Regimental
Color.



PLATE 144.
A Civilian Saluting the Color Correctly.

PLATE 145.
An Ignorant or Disloyal Man.

Miscellaneous.

5. When a superior other than a non-commissioned officer) enters a room where you are present, you should rise and stand at attention until the party leaves the room, takes a seat, or instructs you to take your seat.

Salute at the beginning and the end of your conversation with an officer.

If mounted, always dismount before speaking to a dismounted superior officer.

Always walk or ride on the left side of a superior.

Do not salute while you are engaged in athletic exercises.

If an officer remains in your vicinity, salute him but once.

PLATE 146.—Two Ladies Standing are Saluting the Color Correctly.

Conduct in the Presence of Ladies.

6. When a lady enters a room where you are present, rise and offer her a comfortable chair. Remain standing until she is seated.

When in uniform you may raise your cap (head-dress) in speaking to a lady or simply salute her. Both ways are correct, but the former is the most common in our service.

Never take a lady's arm, but offer her yours, if she is in need of assistance.

When taking seats at a meal, always assist the lady on your right into her chair.

3

PLATE 147.-A Sentinel on Guard Saluting the Color.



PLATE 148.-A Soldier Saluting the Colors.



PLATE 149.—A Soldier Uncovered
Saluting the Colors.



PLATE 150.—A Soldier Armed with a Rifle
Saluting the Colors.

Always offer your seat to a lady who is standing. Do the same thing in the case of an elderly man.

Friends.

7. There are a few men in all companies who play, loaf, and are constantly in trouble. As the good men in each company will not become friendly with them, they seek their acquaintance among the new men on whom they have a bad influence. We wish to warn you about making friends too quickly.

Profanity.

8. Very often there is a tendency on the part of recruits when they first get into uniform to become profane and act as though they are privileged characters. By becoming profane they think they appear to advantage before the older men, but the opposite is true.

Don't be profane or tell questionable stories to your bunkies or comrades at the summer camps. There is a greater number of silent and unprotesting men in each company than is generally supposed, to whom this is offensive. Keep everything on a high plane.

PLATE 151.—The Colors Cased. They
are Never Saluted when Cased.

COURTESY IN THE ARMY.

Politeness or good form is manifested in the army by certain rules or customs of the service different in form only from those employed in civilian life. In either case the purpose is the same, namely, to be polite and to conform to an accepted mode of conduct. Each rule or custom concerning courtesy used in the army is based on some corresponding rule in civilian life. The one who violates these rules in the army is classed in the same group as the civilian classes one of its members who is rude or impolite.

One must realize that the army is a large institution in which individuals are vested with authority from Congress or the President. Every attempt has therefore been made to create impersonal rather than personal relations between its members. For instance, one might have many commanding officers during a year, yet each should receive the same loyalty and support.

The following rules of deportment are so fundamentally sound, being based on general principles of politeness, that their application in civilian, as well as military life, will constitute a successful beginning for any young man.

Use Of The Word "Sir."

In answering a question addressed to you by an officer conclude your remarks with the word, "Sir."

Illustration: If an officer asks your name, you should reply, "Private (cadet, candidate, student) Smith, Sir."

In asking a question of an officer prefix your remarks with the word, "Sir."

Illustration: If the 1st Sergeant has directed you to report to the Company Commander, you should, after saluting him (company commander) say, "Sir, Private Smith reports to the Company Commander as directed by the first Sergeant."

In speaking to an officer use the third person.

Illustration: Private Smith wishes to find out if Lieutenant Doe will inspect his rifle. After saluting Lieutenant Doe, Private Smith should ask, "Sir, will the Lieutenant inspect my rifle?" In other words it is not good form to say you in addressing an officer.

Needless to say, officers recognize and govern themselves according to similar rules when in the presence of superiors.

HOW TO REPORT.

Observe the following rules when reporting to an officer:

1. Outdoors:

Upon reaching the officer, stand at attention then salute and when it is returned make your report. Upon being dismissed salute, make an about face and depart.

2. Indoors:

(a) Knock at the door whether it is open or closed. Do not enter until invited to come in.

(b) Take off your hat, if unarmed or side arms are not worn, and enter the room.

(c) Close the door if it was closed before you entered.

(d) Stand at attention in front of the officer.

(e) Salute.

(f) Make your report when your salute is returned.

(g) Upon being dismissed, salute, make an about face and leave the room.

(h) Close the door if it was closed before you entered. Do not slam it.

(i) Recover if hat has been removed.

The basic principles underlying the rules for addressing an officer or entering his office would be applicable for conversing with the president of the U. S. Steel Corporation or entering his office. In a word they are good sound guides for

either the recruit or the young man starting out in civilian life with a desire to do the right thing and succeed.

These illustrations, except those showing the rank of commissioned officers are not to be studied. They are given for reference and general information.

FINAL DONT'S.

Don't commit any of the following common errors in saluting:

1. Don't salute in a listless, half-hearted way. **MAKE YOUR SALUTE SNAPPY.**

2. Don't salute in an apologetic way. **BE PROUD OF YOURSELF AND YOUR SALUTE.**

3. Don't salute when engaged in athletics such as football or baseball.

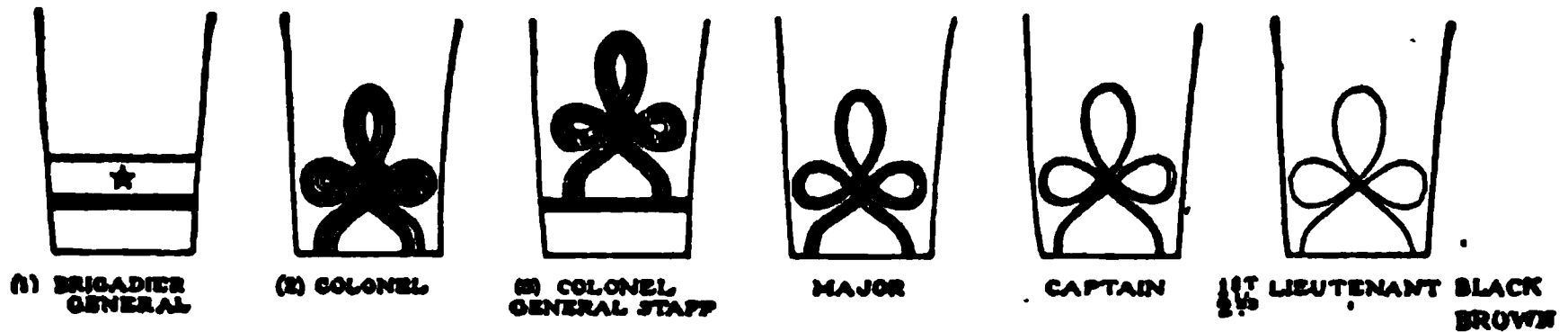
4. Don't salute or call "attention" for an officer entering a recreation or amusement hall such as the Y. M. C. A.

5. Don't salute an officer in a theater, at a dance or indoors at a social event where both of you are guests. Civilian rules of conduct govern on such occasion.

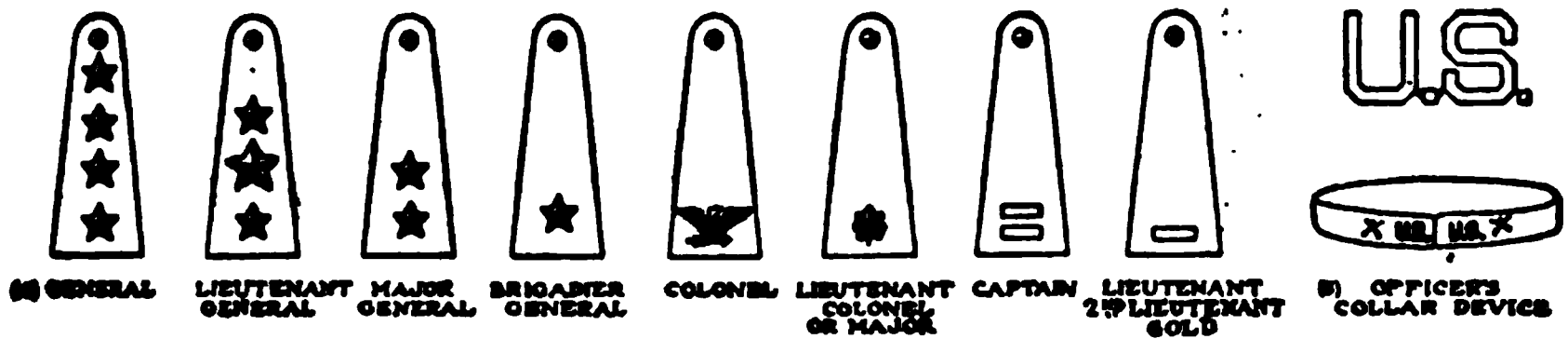
6. **DON'T THINK OF A SALUTE AS A SIGN OF INFERIORITY BUT AS A SIGN OF GOOD MANNERS AND POLITENESS.**

UNITED STATES ARMY

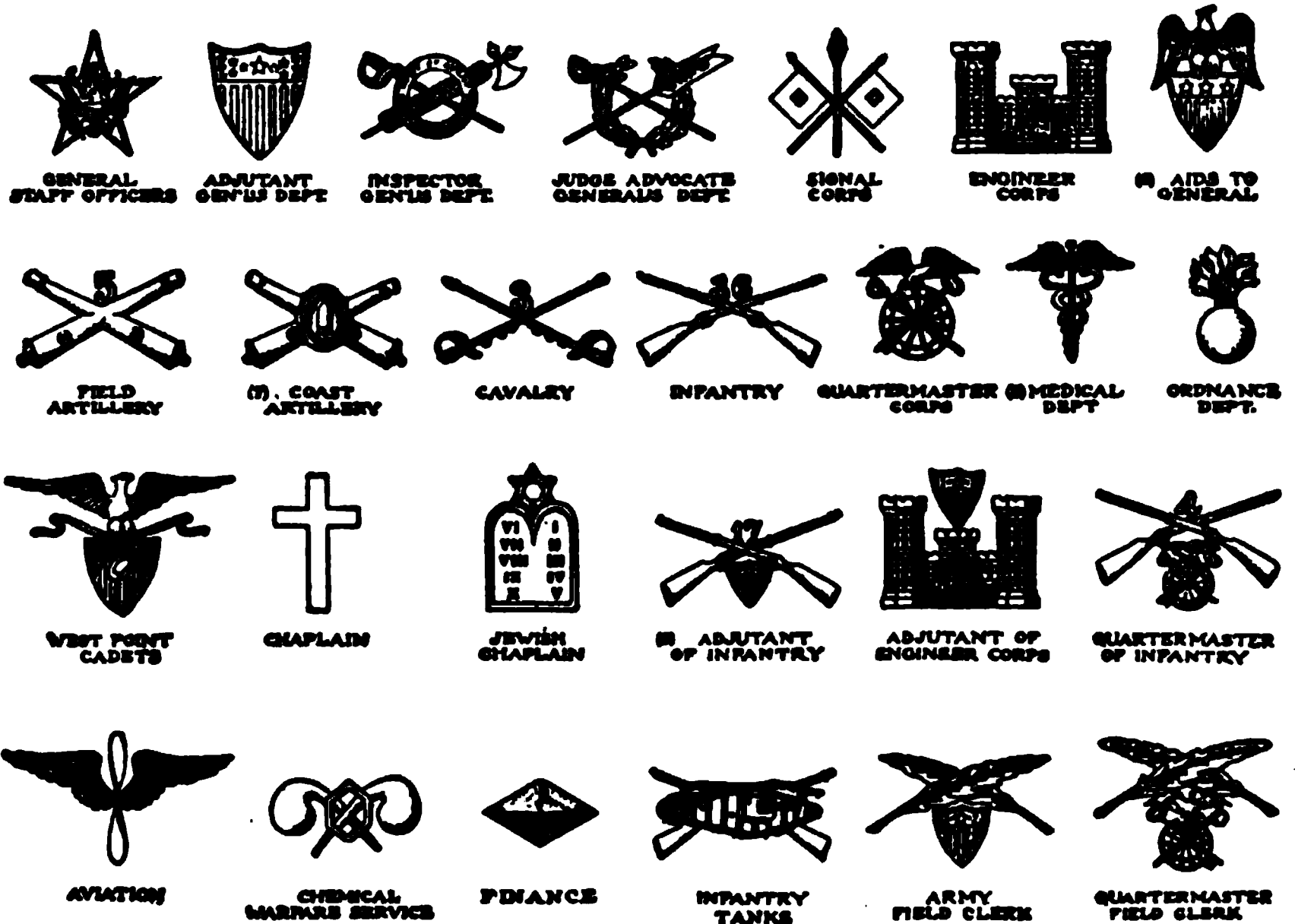
OFFICERS' SLEEVE MARKS



OFFICERS' SHOULDER STRAPS



COLLAR DEVICES OF THE ARMS OF THE SERVICE



CHEVRONS, NONCOMMISSIONED OFFICERS



CHAPTER V.

INDIVIDUAL INFANTRY EQUIPMENT.

PRACTICAL WORK.

It is only by making up and actually wearing the Infantry Equipment that one will become proficient in the subject. Therefore the full equipment should occasionally be worn at drills and field exercises.

Our Infantry Equipment.

The Infantry Equipment is probably the most scientifically designed of any in the world. It was adopted after a long and careful study of the equipment used by the other armies of the world, and is a combination of their good points and such new ones as our experience and study revealed. Its principle is based upon the manner in which a squaw carries her papoose.

The following equipment is carried by each shoulder rifleman when in the field: *

- 5 Pins, shelter tent.
- 1 Pole, shelter tent.
- 1 Tent, shelter, half.
- 1 Bayonet.
- 1 Bayonet scabbard.
- 1 Belt, cartridge.
- 1 Brush, thong, for U. S. Rifle, caliber .30.
- 1 Can, condiment.
- 1 Can, meat.
- 1 Canteen.
- 1 Case, oiler and thong, for U. S. Rifle, caliber .30.
- 1 Cover, canteen, dismounted.
- 1 Cover, front sight, for U. S. Rifle, caliber .30.
- 1 Cup.
- 1 Fork.
- 1 Gun sling.
- 1 Haversack.
- 1 Knife.
- 1 Pouch for first-aid packet.
- 1 Rifle, U. S. caliber .30.
- 1 Spoon.
- 1 Stick, breech, U. S. Rifle, caliber .30.
- 1 Thong, for U. S. Rifle, Caliber .30.

In addition each soldier carries the following articles of clothing and personal equipment in his pack or attached thereto:

- | | | | |
|------------------|---------------|---------------------|--------------------------|
| 1 Blanket. | 1 Raincoat. | 1 Towel. | 1 Undershirt. |
| 1 Comb. | 1 Razor. | 1 Toothbrush. | 1 Shoelaces, extra pair. |
| 1 Drawers, pair. | 1 Soap, cake. | 2 Stockings, pairs. | |

Intrenching tools are also a part of the infantryman's equipment and as such are carried either in the intrenching tool carrier on the pack or in a carrier attached to the belt. They include shovels, pick mattocks, hand axe, bolo and wire cutters.

No specific distribution is advocated other than that the corporals carry the wire cutters and that the automatic riflemen (No. 3 rear rank) carry none of these tools. This allows the commander of the unit to distribute the remainder to the greatest advantage.

* Each member of the squad carries a bandolier except the automatic rifleman. One grenade discharger is carried by each squad.

The success of the Infantry Equipment (commonly called the "Pack") depends upon three things:

1. Assembling the equipment correctly.
2. Assembling the full equipment with, and without rations.
3. Wearing it correctly adjusted.

Assembling the Equipment.

The best way to give instruction in this subject is to show how to assemble the equipment. The instructor should do it, explaining his movements as he proceeds. The following order of assembly is recommended:

The cartridge belt. a. To assemble the belt place the adjusting strap on the ground, eyeletted edge to the front; place the pocket sections on the ground in prolongation of the adjusting strap, pockets down, top of pockets to the front; insert the end of the adjusting strap in the outer loop of the metal guide, from the upper side, carry it under the middle bar and up through the inner loop; engage the wire hook on the end of the adjusting strap in the eyelets provided on the inner side of the belt.

b. Adjust the belt to fit loosely about the waist, i. e., so that when buckled it may rest well down over the hip bones on the sides of the body and below the pit of the abdomen in front. Care should be taken that the adjustment be made equally from both ends of the adjusting strap, so that the center eyelet will be in the middle of the belt.

To attach the first-aid pouch. Attach the pouch under the second pocket from the front on the left section of the belt by inserting one hook of the double hook attachment in the eyelet from the inside of the belt; pinch the base of the pocket, bringing the eyelets close together, and insert the other hook in the same manner in the adjoining eyelet. Place the first aid packet in the pouch and secure the cover.

To attach the canteen cover. Attach the canteen cover to the belt under the rear pocket of the right section in the same manner as the first-aid pouch. Place the canteen and cup (assembled) in the cover and secure the flaps.

To attach the pack carrier to the haversack. Spread the haversack on the ground, inner side down, outer flap to the front (Plate 153); place the buttonholed edge of the pack carrier on the buttonholed edge of the haversack, lettered side of the carrier up; buttonholes of the carrier superimposed upon the corresponding ones of the haversack; lace the carrier to the haversack by passing the ends of the coupling strap down through the corresponding buttonholes of the carrier and haversack nearest the center of the carrier, bringing the ends up through the next buttonholes and continuing to the right and left, respectively to the sides.

To attach the cartridge belt to the haversack. Place the haversack and pack carrier (assembled) on the ground, inner side down (Plate 154); place the cartridge belt, pockets down, tops to the front, along the junction of the haversack and carrier; insert the hook on rear belt suspender in the center eyelet of the adjusting strap, so that the end of the hook will be on the outside of the belt; insert hooks on ends of front belt suspenders in the eyelets between the second and third pockets from the outer ends of the belt, so that the end of the hooks will be on the outside of the belt.

To attach the bayonet scabbard to the haversack. Attach the scabbard by passing its lower end through the loop provided in the side of the haversack body, then engage the double-hook attachment in the eyelets on the outer flap on the haversack, inserting the hooks from the inside.

Place the bayonet in the scabbard.

To attach the intrenching tool carrier to the haversack. Fold the outer flap of the haversack over so that the meat-can pouch is uppermost; pass the intrenching tool carrier underneath the meat-can pouch and engage the double-hook attachment in the eyelets in the flap provided, inserting the hooks from the underside.

Place the intrenching tool in the carrier and secure.

Place the meat can, knife, fork and spoon in the meat-can pouch.

The equipment is now assembled and is never disassembled except to detach the pack carrier and its contents as hereinafter provided for.

Assembling the Full Equipment.

The instructor should explain the two kinds of full equipment, namely ; with and without rations. When the rations are carried a short pack is rolled and when the rations are not carried the long pack is rolled. When going into battle rations

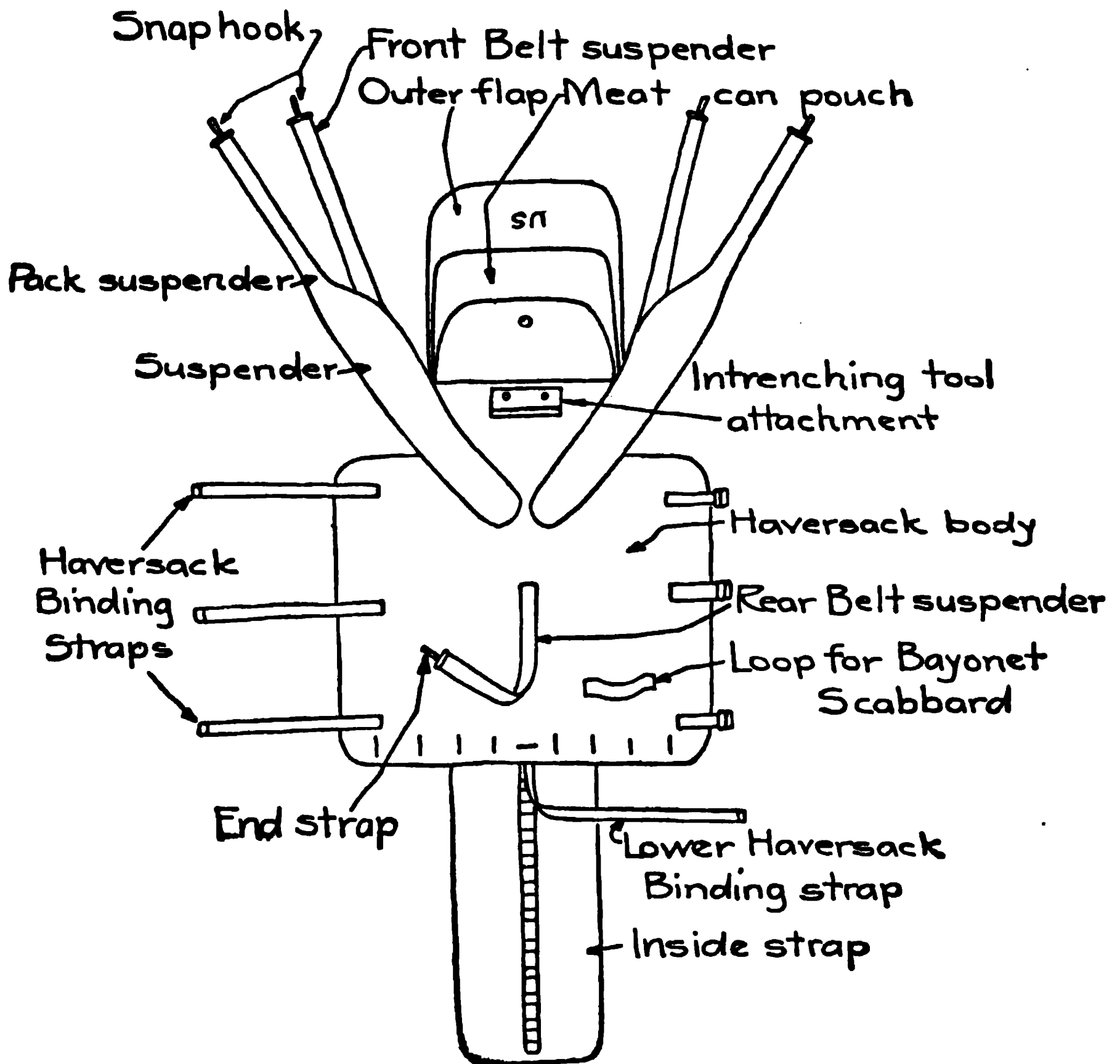


PLATE 153.

are carried in the equipment and a short pack is rolled. When on the march and there is plenty of transportation the rations are often carried on the wagons. In this case the long pack is rolled.

The instructor should explain how to make up the full field equipment and actually do it at the same time. Then he should require the students to make up the two equipments.

To Assemble the Full Equipment.

(With Rations.)

Place the assembled equipment on the ground, suspender side of haversack down, pockets of cartridge belt up, haversack spread out, inside flap and pack carrier extended their full length to the rear.

Place three cartons of hard bread in the center of the haversack body, the lower one on the line of attachment of the inside flap; lay the remaining carton of hard bread and the condiment can on top of these; the socks and toilet articles are rolled, towel on the outside, into a bundle of the same approximate dimensions as a carton of hard bread, and are placed in front of the two rows thus formed.

The inside flap of the haversack is folded over these articles, the end of the flap being turned in so that the flap, thus shortened, extends about 2 inches beyond the top of the upper row; the sides of the haversack are folded over the sides of the rows; the upper binding straps are passed through the loops on the outside of the inside flap, each strap through the loop opposite the point of its attachment to the

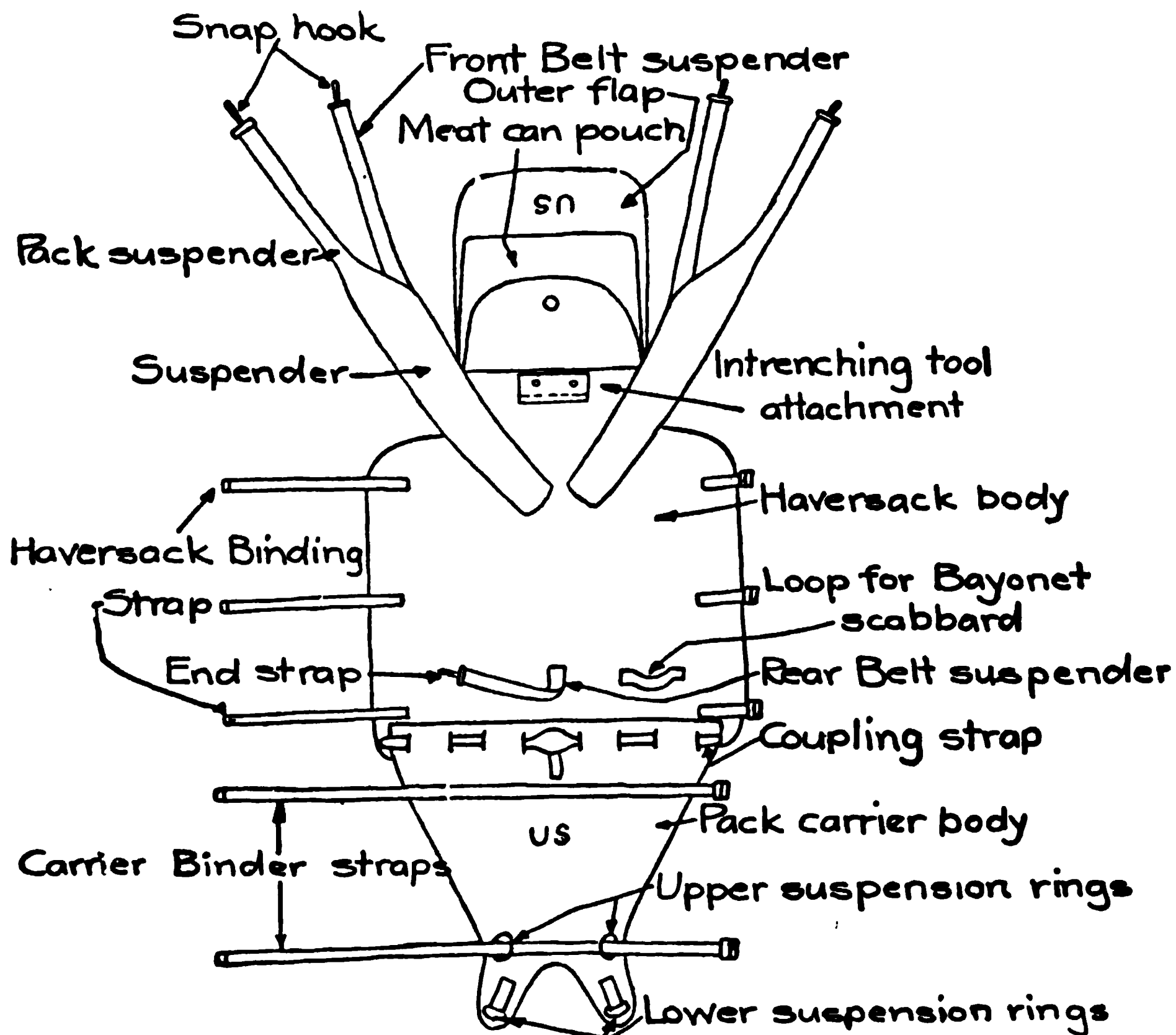


PLATE 154.

haversack body, and fastened by means of the buckle on the opposite side, the strap being passed through the opening in the buckle next to its attachment, over the center bar, and back through the opening of the buckle away from its attachment; the strap is pulled tight to make the fastening secure; the outer flap of the haversack is folded over and fastened by means of the lower haversack binding strap and the buckle on the inside of the outer flap; the strap is pulled tight, drawing the outer flap snugly over the filled haversack.

The haversack is now packed and the carrier is ready for the reception of the pack.

If one haversack ration and one emergency ration are carried in lieu of two haversack rations, the haversack is packed in the manner described above, except the two cartons of hard bread and the condiment can form the bottom layer, the emergency ration and the toilet articles form the top layer.

If one emergency ration is carried in addition to the two haversack rations, it is packed on top of the top layer.

To make the pack. Spread the shelter half on the ground and fold in the triangular end forming an approximate square from the half, the guy on the inside; fold the blanket once across its shortest dimension, then twice across its longest

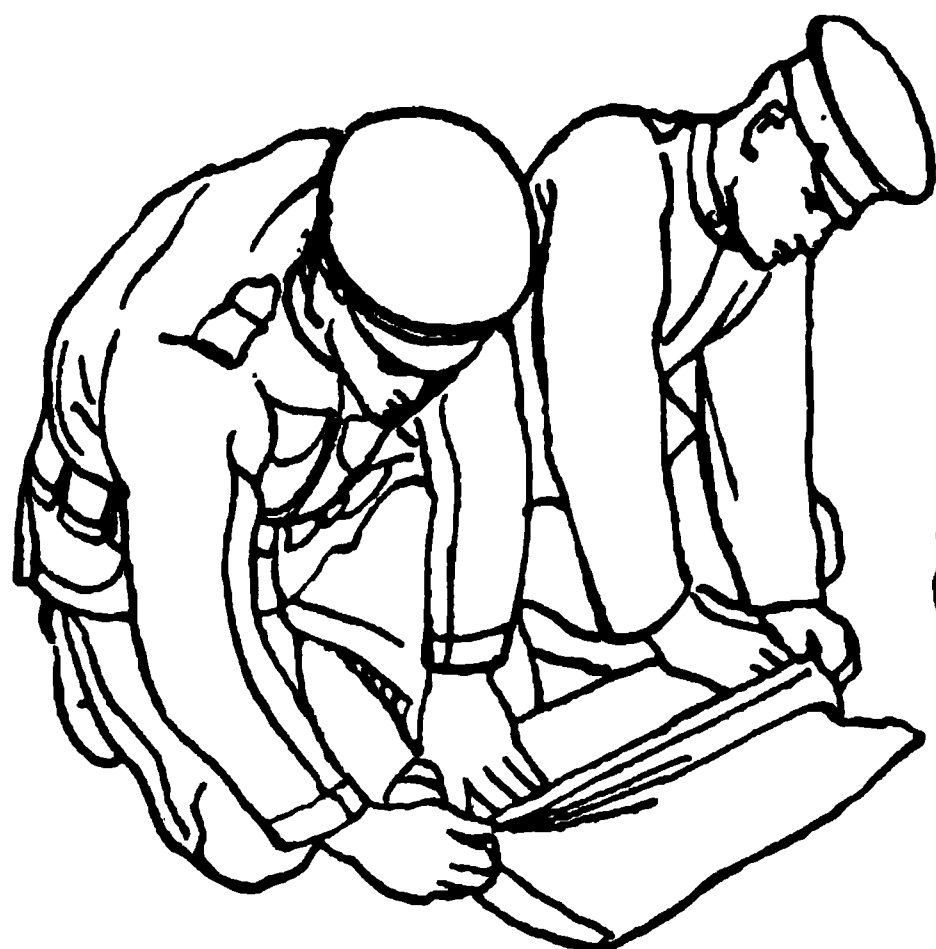


PLATE 155.

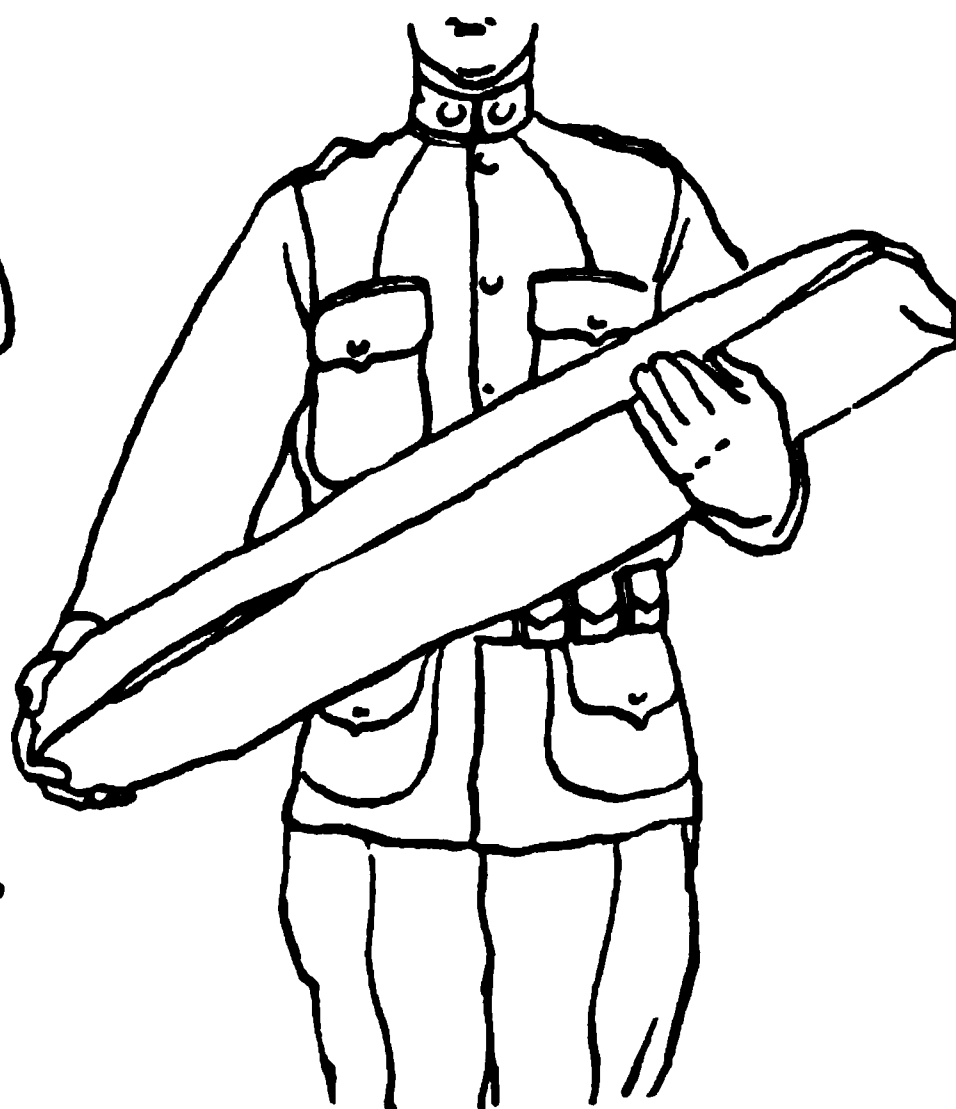


PLATE 156.

dimension, and lay it in the center of the shelter half; place the shelter tent pins in the folds of the blanket, in the center and across the shortest dimension; fold the edges of the shelter half snugly over the blanket and, beginning on either of the short sides, roll tightly and compactly. This forms the pack.

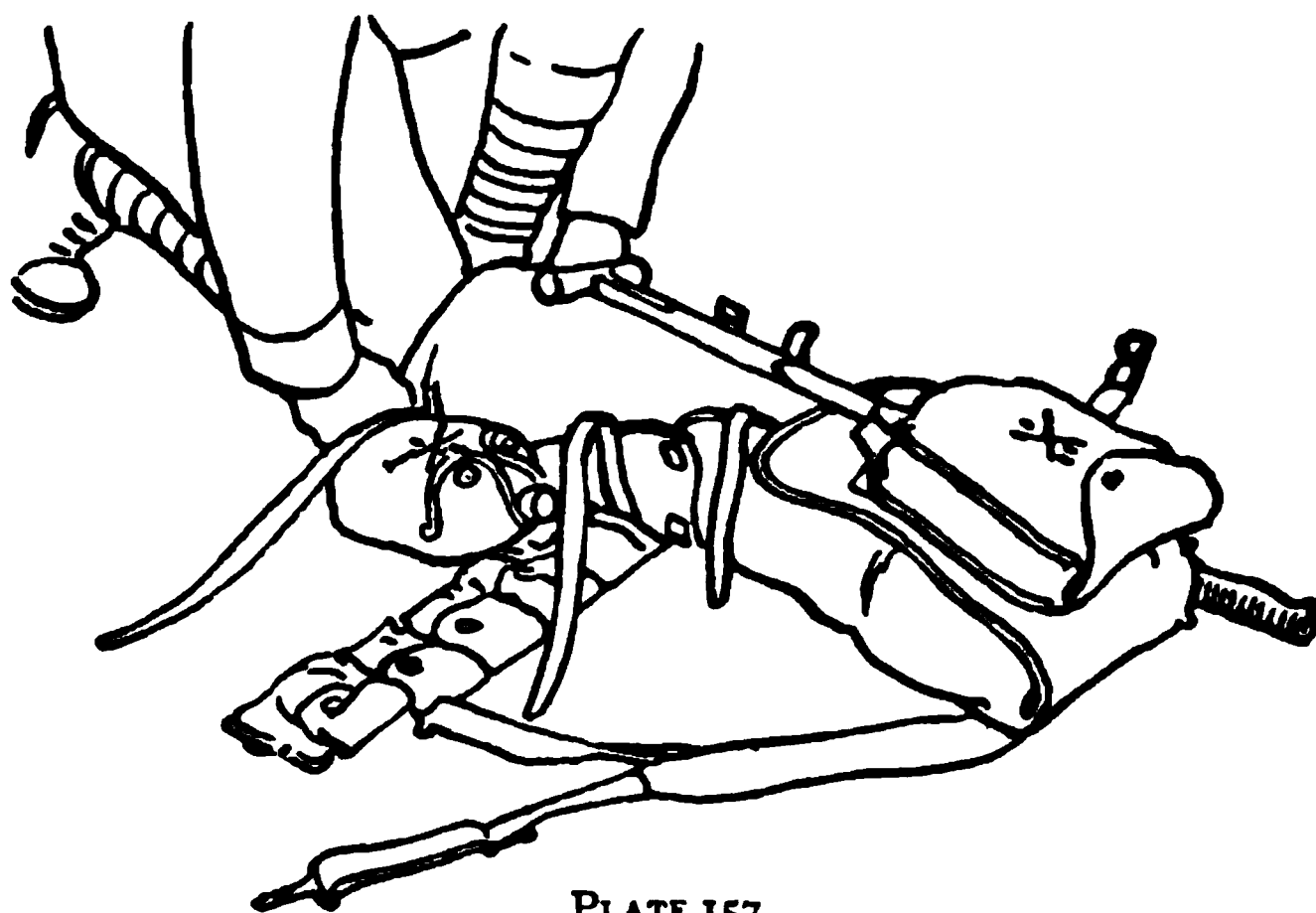


PLATE 157.

Get your tent mate to help you in rolling the pack. It is a two-man job and must be rolled tightly to carry well on the march. The end of the shelter half may be folded back as shown in Plate 155, and the pack rolled in the pocket thus formed. A pack rolled in this manner will not come unrolled (see Plate 156). It is waterproof, and when so rolled, will support the weight of the body in water for some time.

To assemble the pack. Place the pack in the pack carrier and grasp the lower suspension rings one in each hand; place the right knee against the bottom of the roll; pull the carrier down and force the pack up close against the bottom of the packed haversack Plate 157; without removing the knee, pass the lower carrier binding strap over the pack and secure it by means of the opposite buckle; in a similar manner secure the lower haversack binding strap and then the upper carrier binding strap, Plate 158.

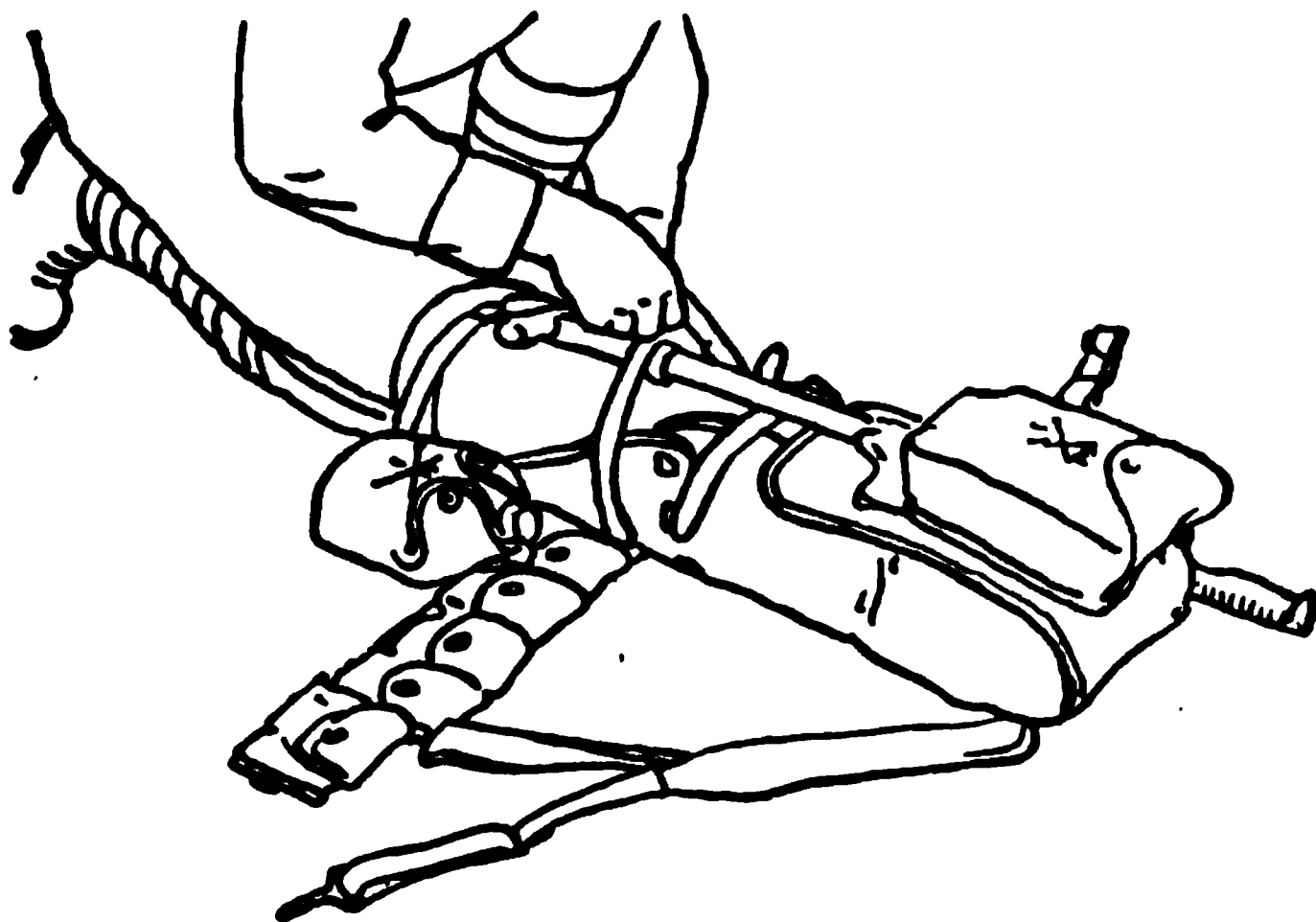


PLATE 158.

Engage the snap hook on the pack suspenders in the lower suspension rings. The equipment is now assembled and packed as prescribed for the full equipment.

To Assemble the Full Equipment.

(Without Rations.)

Place the assembled equipment on the ground as heretofore described; fold up the inside flap of the haversack so that its end will be on a line with the top of the haversack body; fold up the lower haversack strap in the same manner.

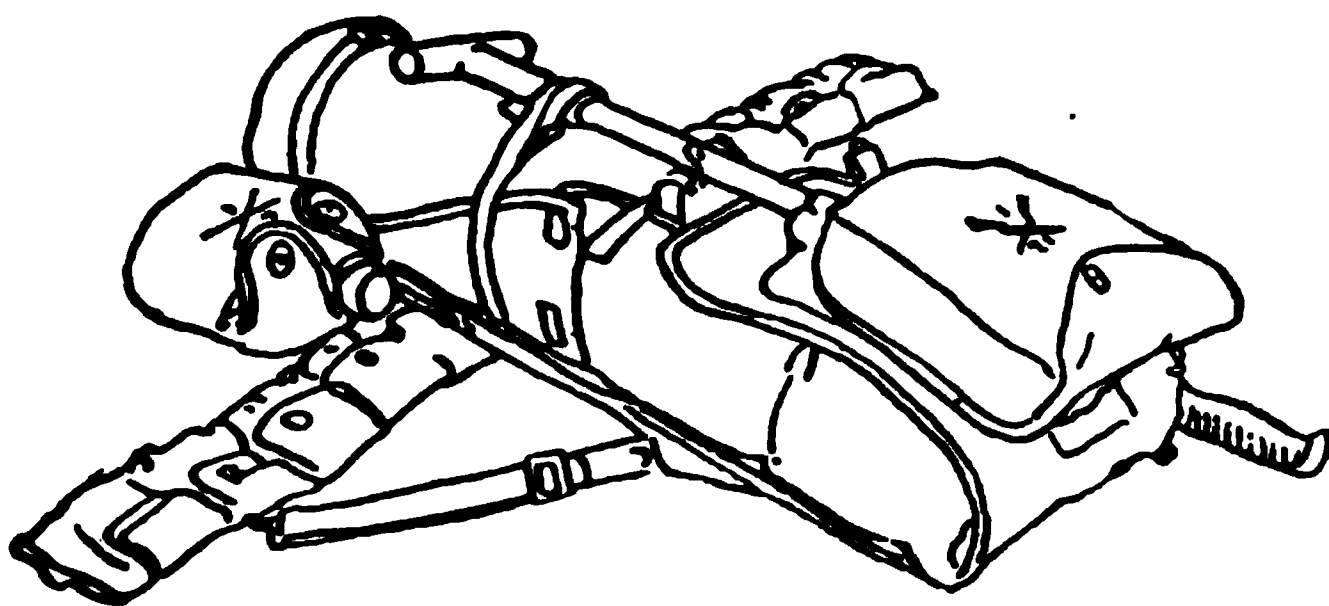


PLATE 159.

To make up the pack. Fold the blanket and shelter half, and make up the pack as heretofore prescribed, except that the condiment can and the toilet articles and socks are rolled in the pack. In this case the pack is rolled, beginning on either of the long sides instead of the short sides, as heretofore described.

To assemble the pack. Place the pack on the haversack and pack carrier, its upper end on a line with the upper edge of the haversack body; bind to the haversack by means of the haversack and pack binding straps; fold down the outer flap on the

haversack and secure it by means of the free end of the middle haversack binding strap and the buckle provided on the underside of the flap; engage the snap hooks of the pack suspenders in the lower suspension rings.

The equipment is now packed and assembled.

To adjust the equipment to the soldier. Put on the equipment, slipping the arms one at a time through the pack suspenders as through the sleeves of a coat Plate 160; by means of the adjusting buckles on the belt suspenders, raise or lower the belt until it rests well down over the hip bones on the sides and below the pit of the abdomen in front; raise or lower it in rear until the adjusting strap lies smoothly across the small of the back; by means of the adjusting buckles on the pack suspenders, raise or lower the load on the back until the top of the haversack is on a level with the top of the shoulders, the pack suspenders, from their point of attach-



PLATE 160.

PLATE 161.

ment to the haversack to the line of tangency with the shoulder, being horizontal. *The latter is absolutely essential to the proper adjustment of the load, Plate 161.*

The position of the belt is the same whether filled or empty.

To Assemble the Full Equipment Less the Pack.

(With Rations)

Detach the carrier from the haversack; place the rest of the equipment on the ground as heretofore described; place the four cartons of hard bread, the condiment can, and the toilet articles in one row in the middle of the haversack body, the toilet articles at the top, the row extending from top to bottom of the haversack; fold the inside flap over the row thus formed; fold the sides of the haversack up and over; pass the three haversack binding straps through the loops on the inside flap and secure by means of the buckles on the opposite side of the haversack; pass the lower haversack binding strap through the small buttonhole in the lower edge of the haversack, fold the outer flap of the haversack over the whole and secure by means of the buckle on its underside and the lower haversack binding strap.

Pass the haversack suspension rings through the contiguous buttonholes in the lower edge of the haversack and engage the snap hooks on the ends of the pack suspenders.

If one haversack ration and one emergency ration are carried in lieu of two haversack rations, the haversack ration is packed in the manner described above, except that one emergency ration is substituted for two of the cartons of hard bread.

If one emergency ration is carried in addition to the two haversack rations, it is packed on top of the layer.

To Assemble the Full Equipment Less the Pack.

(Without Rations.)

Detach the carrier from the haversack; place the rest of the equipment on the ground as heretofore described; fold up the inside flap of the haversack until its upper end is on a line with the top of the haversack body; fold the sides of the haversack over, pass the three haversack binding straps through the loops on the inside flap and secure by means of the buckles on the opposite side of the haversack; pass the lower haversack binding strap through the small buttonhole in the lower edge of the haversack; place the condiment can and the toilet articles and socks in the bottom of the pouch thus formed; fold the outer flap of the haversack over the whole and secure by means of the buckle on its underside and the lower haversack binding strap.

Pass the haversack suspension rings through the contiguous buttonholes in the lower edge of the haversack and engage the snap hooks on the ends of the pack suspenders.

To adjust the equipment to the soldier. Put on the equipment as described for the full equipment. Adjust the cartridge belt as described for the full equipment. Adjust the pack suspenders so that the top of the haversack is on a level with the top of the shoulders.

To Discard the Pack Without Removing the Equipment from the Body.

Unsnap the pack suspenders from the suspension rings and snap them into the eyelets on top of the belt and in rear of the rear pockets of the right and left pocket sections; support the bottom of the pack with the left hand and with the right hand grasp the coupling strap at its middle and withdraw first one end, then the other; press gently down on the pack with both hands and remove it. When the pack has been removed, lace the coupling strap into the buttonholes along the upper edge of the carrier. Adjust the pack suspenders.

Besides being able to assemble the equipment correctly the student should know how to pitch shelter tents and display the equipment for the purposes of inspection. We will first take up the method of pitching shelter tents.

To Pitch Shelter Tents.

The company must be formed in single or double column of platoons before pitching shelter tents.

Being in single or double column of platoons, the captain commands: **FORM FOR SHELTER TENTS.**

The soldiers of the company and platoon headquarters form additional files on one or both flanks of the platoon as directed by company and platoon commanders; blank files are filled by file closers or by men taken from the front rank.

The captain then causes the company to take intervals as described in School of the Squad, and commands: **PITCH TENTS.**

At the command **PITCH TENTS**, each man steps off obliquely to the right with the right foot and lays his rifle on the ground, the butt of the rifle near the toe of the right foot, muzzle to the front, barrel to the left, and steps back into his place; each front-rank man then draws his bayonet and sticks it in the ground by the outside of the right heel.

Equipments are unslung, packs opened, shelter half, poles and pins removed; each man then spreads his shelter half, triangle to the rear, flat upon the ground the tent is to occupy, the rear-rank man's on the right. The halves are then buttoned together. Plate 162.

Each front-rank man joins his pole, inserts the top of it in the eyes of the halves, and holds the pole upright beside the bayonet placed in the ground; his rear-rank

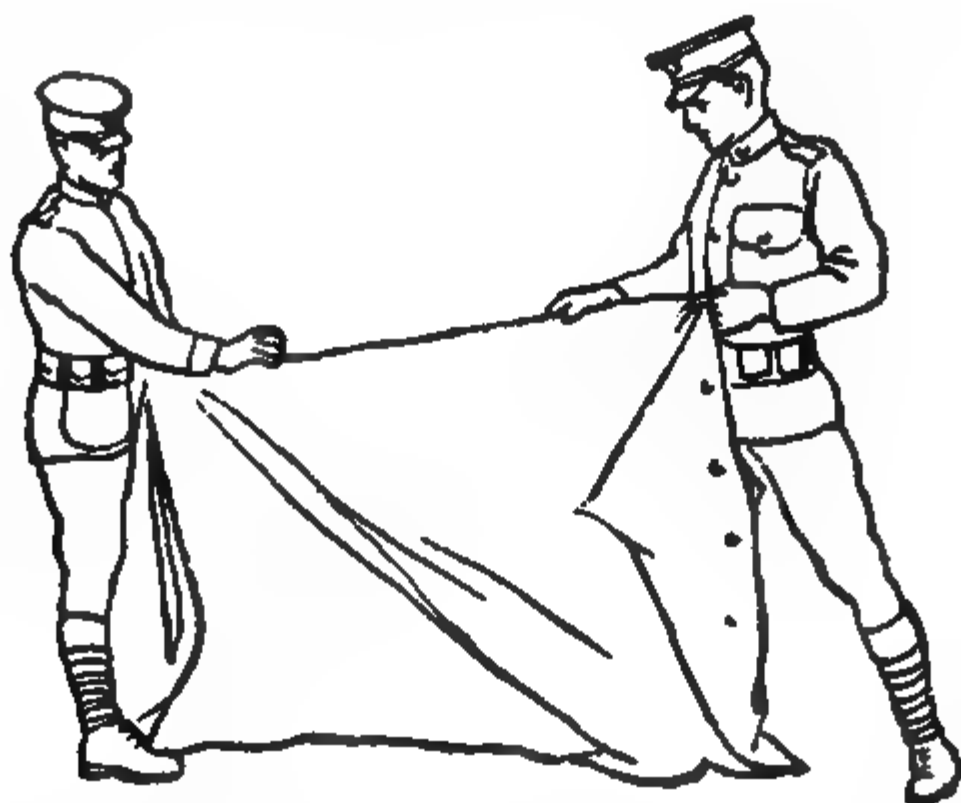


PLATE 162.

man using the pins in front, pins down the front corners of the tent on the line of bayonets, stretching the canvas taut; he then inserts a pin in the eye of the front guy rope and drives the pin at such a distance in front of the pole as to hold the rope taut. Plate 163.

PLATE 163.

Both men then go to the rear of the tent; the rear-rank man adjusts the pole and the front-rank man drives the pins. Plate 164. The rest of the pins are driven by both men, the rear-rank man working on the right.

As soon as the tent is pitched each man arranges his equipment and the contents of his pack in front of the tent and stands at attention in front of his own half on line with the front guy rope pin. Rifles are placed on the ground, bolt up, to the left of the equipment, muzzle of rifle on line with the cartridge belt. Plate 165

To have a uniform slope when the tents are pitched, the guy ropes should all be of the same length.

To Pitch Double Shelter Tents.

In exceptionally cold and inclement weather it is sometimes desirable to pitch double shelter tents so they may be closed and the additional heat from the bodies of four men used to provide the necessary warmth.

PLATE 164.

To pitch double shelter tents, the commands are the same as those prescribed above, except that half intervals (2 paces) are taken at the command: 1. *Take half interval*, 2. *To the right (left)*, 3. MARCH, 4. *Platoon*, 5. HALT, and tents

PLATE 165.

are pitched at the command PITCH DOUBLE TENTS. Only the odd numbers of the front rank mark the line with the bayonet.

The tent is formed by buttoning together the square ends of two single tents. Two complete tents, except one pole, are used to form a double tent. Two guy

ropes are used at each end, the guy pins are placed in front of the corner pins. The tents are pitched by Nos. 1 and 2, and by Nos. 3 and 4, front and rear rank.

All men spread their shelter halves on the ground the tent is to occupy. The halves of the front rank men are placed with the triangular ends to the front. All four halves are then buttoned together, first the ridges and then the square ends. The front corners of the tent are pinned by the front rank men, the odd number holds the pole, the even number drives the pins. The rear rank men similarly pin the rear corners.

While the odd numbers steady the poles, the even number of the front rank takes his pole, and enters the tent; assisted by the even number of the rear rank, he adjusts the pole to the center eyes of the shelter halves in the following order: (1) The lower half of the front tent; (2) the lower half of the rear tent; (3) the upper half of the front tent; and (4) the upper half of the rear tent. The guy ropes are then adjusted.

The tents having been pitched, the triangular ends are turned back, contents of the rolls arranged, and the men stand at attention, each opposite his own shelter half and facing outward.

To Strike Shelter Tents.

The men standing in front of their tents: **STRIKE TENTS.**

The tents are lowered, packs made up, and equipments slung and the men stand at attention in the places originally occupied after taking intervals.

Arranging Equipment for Inspection.

After the tent is pitched the contents of the pack should be arranged in the following manner for the purpose of inspection. Each man arranges his equipment in front of his own shelter half. Plate 166.

1. The blanket, folded as described in making up the pack is placed on the ground outside and in front of the tent with its folded edge toward the front, rear edge on line with tent front, one corner of blanket touching center pole.

2. The meat can, knife, fork and spoon are removed from the meat can pouch and the canteen and cup are removed from the canteen cover.

3. The cartridge belt is placed along the front of and touching the blanket, the top of the pockets to the front. The canteen cover and first-aid pouch rests on the blanket.

4. The pack carrier is then folded under the haversack and the lower edge of the haversack placed against the belt. The haversack is spread evenly on the ground and the inside flap of the haversack folded back so as to uncover the cartridge belt.

5. The flaps on the cartridge pockets of the cartridge belt are now opened exposing their contents to view. The cover of the first-aid pouch is opened and the first-aid packet withdrawn part way exposing the ring.

6. The towel is folded the size of the outer flap of the haversack and placed upon it. Toilet articles, i. e., soap, comb, toothbrush and razor, are placed upon the towel from front to rear in the order named. The socks are placed in rear of the razor, folded in such a manner that the heels and toes are exposed. Shaving brush and soap and tooth paste are placed on top.

7. The condiment can is placed on the center of the haversack, the condiment can parallel to the front, large end to the right. Rations are placed as shown.

8. Special articles carried by individuals such as the flag kit, field glasses, compass, steel tape, note book, etc., are arranged in the extra space between the overcoat and tent pins.

9. The meat can is now opened and placed on the ground to the right of the upper flap of the haversack, with the handle to the rear. The meat can cover is placed in rear of the meat can and to the right of the handle.

10. The knife, fork and spoon are placed in the meat can from left to right in the order named, handles to the rear.

11. The canteen is removed from the cup and placed to the left of the upper flap of the haversack, screw top to the front. The cup is placed in rear of the canteen, top to the front.

12. The underwear is placed on the left of the blanket. The overcoat on the right of the blanket. The raincoat is placed on top of the overcoat.

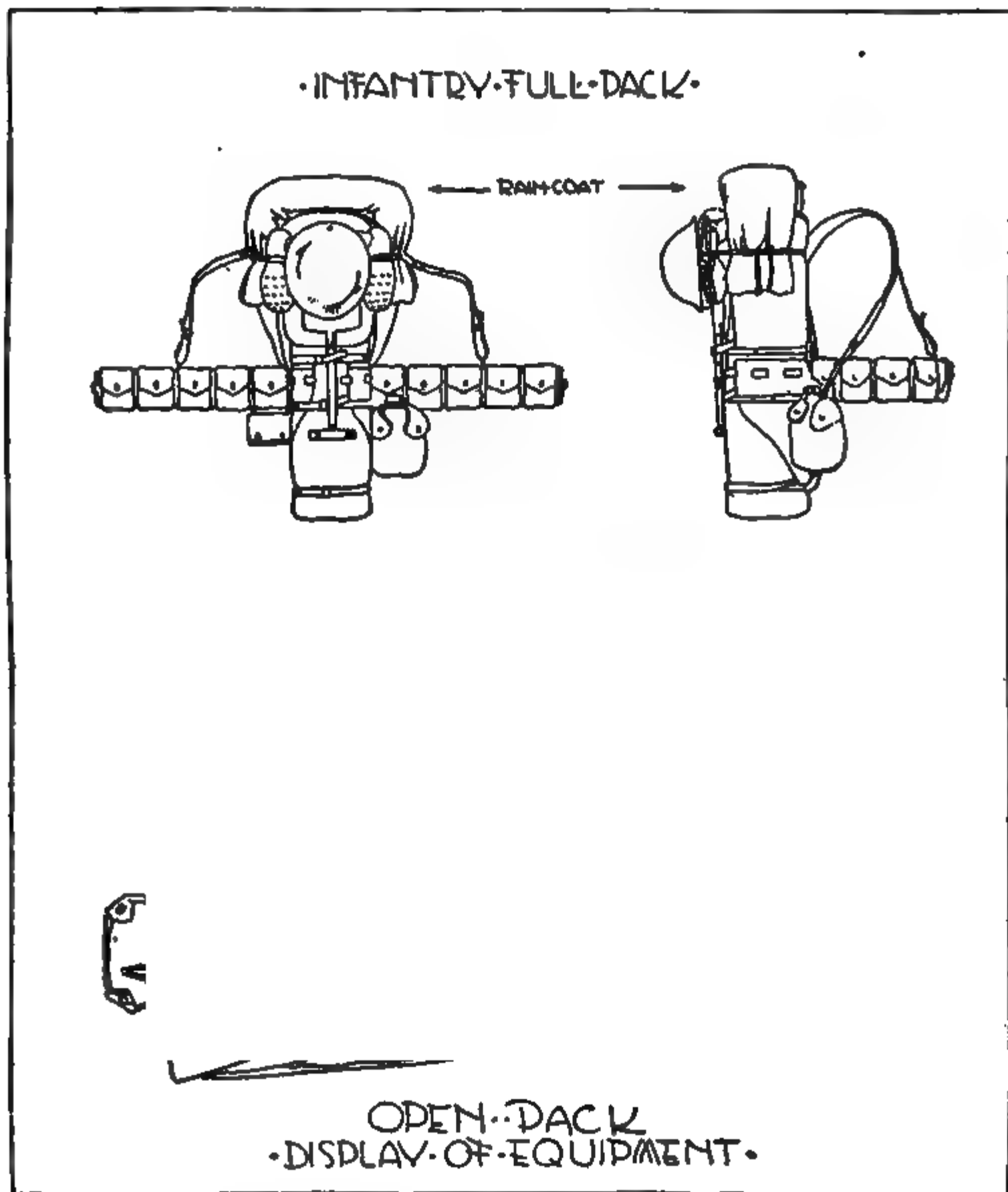


PLATE 166.

13. The shoes are placed in the center of the haversack, soles up. The gas mask is placed as shown, mask displayed.

If the tent is not pitched the poles, pins and rope are placed on the blanket as indicated.

The upper part of Plate 166 shows the method of attaching the raincoat, helmet and shoes to the pack, the tent rope being used for this purpose.

CHAPTER VI.

CAMPING AND MARCHING.

INTRODUCTION.

Where is the young man who does not like to march away from civilization into the woods and make a camp for the night, with all of the accompanying hardships? Such a life has an additional attraction for a young man who has undergone a course of military training. Such a man puts into practical use, during the march and camp, the many lessons that he has been taught on the drill ground and in the lecture room. He returns from the march and camp with a knowledge of many practical points on camp and personal hygiene, and of the pleasures and hardships. He knows how a man adapts himself to changing conditions, all of which cannot be learned from books or lectures. He learns something of camp craft, and of wood craft. His physique is improved, his lungs are in better shape for having received pure air. His mind is active. Take advantage of every opportunity to make a march and live in camp. Let's get back the old pioneer hardiness that we have lost.

Advice Regarding Habits in Camp and on the March.

Your life in camp in regard to food, exercise, hours of sleep, surroundings, and comforts will differ greatly from that which you lead at home. You will submit your body to a sudden, severe, physical test. In order to prepare your body for this change in living and work, we recommend that for a short time prior to your march to camp, and thereafter, you observe the following suggestions:

1. Eat and drink moderately. Chew your food well. It is advisable, however, to drink a great deal of cool (not cold) water between meals.
2. Don't eat between meals. Keep away from all soda fountains and soft drink stands.
3. Retire early and get a good night's rest.
4. Accustom yourself to regular hours as to sleeping, eating, and the morning functions. Should you become constipated, report at once to the doctor or to your leader for medicine.
5. For at least two weeks prior to your arrival in camp, take regularly the physical exercises described in this book.

Care of Feet.

On a practice march your feet are your means of transportation. If you neglect them, you will suffer greatly, and, probably, undergo the mortification of having to drop out of ranks and be laughed at by your wiser comrades. Observe the following precautions:

1. Wash and dry the feet carefully and put on clean socks as soon as practicable after getting into camp.
2. Wash out the socks you have been wearing and hang them out to dry.
3. Do not wear socks with holes in them if you can possibly avoid it. Should a hole begin to cause rubbing, turn the sock inside out or change it to the other foot.
4. Keep your toe nails cut square across the ends so that they will not grow in.
5. If you have ever had trouble with the arches of your feet, wear braces for them.
6. Lace your shoes as tightly as comfort will permit.
7. Every morning shake a little talcum powder or "Foot Ease" in each shoe.
8. Wear light wool socks.

9. In case of any foot trouble that you cannot relieve, report to the surgeon at once. Don't wait until you cannot march before reporting.

10. A light pair of sneakers or canvas tennis shoes are serviceable for camp wear in the afternoons after a morning march. They are restful to the feet.

11. *Treatment for blisters.* Be careful not to tear off the skin covering the blister. Heat the point of a needle until it is red hot and when it cools, insert it under the live skin a little distance away from the blister. Push it through to the under side of the bruised skin or blister and then press out the water. To protect the blister, grease a small piece of chamois with vaseline and place it so that it covers the blister and extends over to the solid skin surrounding it. Then place a piece of oxide adhesive tape over the chamois. This method allows the protective covering to be removed without rupturing the skin over the blister and protects the new, tender, and sensitive skin so that the weight can be rested upon the feet without causing severe pain. One man in each squad should be provided with a needle, adhesive tape, a bottle of vaseline, and a piece of chamois for the common use of the squad. Another man should be provided with a small bottle of iodine and some adhesive cotton to be used on scratches and insect bites.

12. *Shoes.*

a. Be sure they fit your feet. The shoe you wear at home or at school won't do for marching when, with the additional weight you carry, your foot spreads in breadth and extends in length, hence shoes should be longer and broader than your ordinary shoes. *This is a very important item and should not be neglected.* If your shoes are too large, blisters will result; if too small, your foot will be cramped and every step will be painful. *The common tendency is to wear shoes too small.*

b. Have your shoes well broken in before you go on the practice march.

c. Keep your shoes well oiled so they will be soft and pliable, and keep out water.

d. If your shoes get wet on the inside, heat some small pebbles (not so hot as to burn leather) and keep them inside the shoes until dry.

MARCHES.

Instructions for a Leader.

For marches to be entirely successful, three conditions must be fulfilled: (1) You must get there. (2) You must get there on time. (3) And you must get there in good condition. *Successful marches depend upon careful preparation before starting.*

To illustrate: Suppose there is a big fire in your community and your company is called upon to help extinguish it; if it is to be of any service it must get to the fire, it must get there before the fire is out, and it must be physically able, when it arrives at the fire, to fight it.

If you are to be a leader (every real American boy expects some day to become a leader), keep these points in mind:

1. Always have, when possible, the comfort of your men in mind. Their work in carrying a load and marching the distance will be hard enough. Don't give them any extra hardships.

2. Make the conditions of the march pleasant. Encourage the men to laugh, sing, and whistle. Have a company song.

3. It is the custom in the army to help a man who is not strong physically but who is straining every nerve to get there. Be the first to volunteer to carry for him his rifle or part of his burden.

4. Look out especially for the feet of your men and the hoofs of your animals. This is usually done by inspecting them.

5. On long marches one day in seven should be a day of rest, worship, and recreation.

6. Encourage your men to keep in step. It is easier to march in step than out of step. A drum or fife adds materially to the spirit of marching men.

7. Interest in the march will always be stimulated if at least one member of the squad has a map of the country.

Marching Rules.

1. Take great pains each morning when a march is prescribed to make a neat, small, and solid pack and strap it securely.

2. Don't put your pack on until ready to go.

3. Adjust packs if necessary, at the first halt.

4. Do not leave the column without the express permission of your leader.

5. Keep your proper place in the column.

6. Keep forty inches from the man in front of you.

Esprit de Corps.

Have too much esprit de corps (spirit and pride) to complain of the length of the march, or to kick about the dust on the road. Be self-controlled. Don't boast of your ability to march on forever. Such remarks are depressing to a tired comrade, who is not as *physically* strong as you.

Halts.

A ten-minute halt is made every fifty minutes for the purpose of resting. Take advantage of the opportunity to rest your feet by sitting down at once along the side of the road near the place where your squad will form when the march is resumed. Remain seated until the command to fall in is given. Don't take off your pack.

Sit down in such a way that you do not support the weight of the pack on your shoulders while resting. Don't go wandering off into people's yards or orchards. Relax as completely as possible. Get into place immediately when the signal is given.

Water.

Fill your canteen each evening so you will have some water handy in the morning. *Excessive water drinking on the march is the most common fault of the inexperienced man.* One swallow of water calls for another. Soon your canteen is empty. Your stomach feels uncomfortable. You are still thirsty. It is necessary to replace some of the water of the body which is lost by perspiration, and this is often necessary; first gargle out the mouth and throat, and spit the water out; then take a swallow or two, but be careful not to drink to excess. Take pride in seeing how small an amount of water you use while marching. Too much water drinking fills the hospital ambulances and farm yards with men, who should be in ranks. Be too proud to drop out of the column. One half a canteen of water is sufficient for you on any march you will have to make. After you arrive in camp and have cooled off a little, drink as much water as you desire, but do so slowly.

A stream, even when it is cool and clear, may be alive with deadly germs. Its sources and its banks may be polluted. Sewers may be discharged into it. Washing may be done in it. Such conditions are usually true in densely populated areas like New York, Massachusetts, and Ohio.

There are a great number of so-called water-borne diseases. This means that the germs of these diseases are often found in water. Typhoid fever, cholera, dysentery, diarrhea, and intestinal worms are known as water-borne diseases.

A well-instructed man does not drink any water until it has been pronounced pure by a doctor, or in the absence of a doctor, until he has inquired of the inhabitants regarding its purity. If there is any doubt as to its purity or source, he boils it for at least *twenty minutes*. This boiling kills the germs and renders the water pure.

If the water supply of the camp is a running stream, a point farthest up stream is designated as the place where the drinking and cooking water must be obtained. Then a point lower down stream is designated as the place where the animals must be watered. A third point still farther down stream is designated where the men must bathe and wash their clothing. Every good man should take pride in seeing that water regulations are strictly enforced. In case, however, some men may be so careless, or even depraved as to disregard the regulations, a sentinel should be placed on duty to enforce them. He should be posted just as soon as you reach camp.

The water supply of a small stream can be increased by damming it. To increase the water supply of a small spring, scoop it out and sink in it a barrel with holes in the bottom. Keep the surface water away from a spring by digging a ditch around it and banking the dirt on the side of the ditch near the spring.

CAMPS.

Selection of a Camp Site.

A site for a permanent camp should be located on slightly sloping, easily drained ground, which has a sunny exposure. Shade should be near by but not in the camp. The ground should be high and dry. Closely cropped turf with a gravelly subsoil is best. The high bank of a river makes a good camp site, provided no marshes are near. A site for a camp to last only for a night or two should be on high and dry ground. Shade in this case can be in the camp.

Avoid old camp sites. Do not locate a camp near marshy ground, stagnant water, cemeteries, or at the foot of a hill, in the dry bed of a stream or ravine. Avoid low ground and other places where mosquitoes and flies are plentiful. *Associate with mosquitoes and flies, sickness and death.* The camp site should be where wood and pure water can be obtained.

Camp Sanitation.

In camp you are really your brother's keeper. It is the duty of every man to keep the camp clean, sanitary, and livable. Constantly bear in mind that a great number of men are living together in a very small area; that food is being prepared in the open; that there are no sewers; and that the ground and streams must not be polluted. Due to lack of knowledge of camp sanitation, more men have died in past wars from camp diseases than were killed in battle. Obey willingly and make your comrade obey the following rules of camp and personal sanitation:

1. Don't take food to your tent. It attracts flies.
2. Use the latrines that are provided. Lazy, ignorant, and careless men defile the ground around camp and are responsible for some of their brothers being sick.
3. When possible bathe each day as soon as practicable after you arrive at camp.
4. Don't throw food or fruit peeling on the ground. Remember the fly.
5. Dispose of any food you cannot eat by burning it in the kitchen incinerator.
6. Keep away from the kitchen and cooks.
7. Don't dip your cup in the drinking water receptacle. Use the dipper provided for that purpose, to pour water into your own cup.
8. If sick, report to a surgeon. Stay away from sick people. They may have contagious diseases.
9. Don't litter up the camp with paper.
10. Get your drinking water and bathe at the authorized places.
11. On leaving camp the ground should be in better condition than when you arrived. All sinks, latrines, ditches, and holes are filled and the earth tamped down; all combustibles that have no value should be burned and non-combustible matter either buried or piled so that it can be carted away.

12. All deposits in the latrines should be covered with earth.
13. Flies carry germs; therefore see that they do not light on your food.
14. Mosquitoes can transmit malaria and yellow fever. Therefore use a mosquito bar if there are mosquitoes in the camp. Mosquitoes breed best in stagnant water. See, therefore, that there is no stagnant water in or around camp.
15. Brush your teeth at least twice each day. Brush away from the gums. Use dental floss.
16. Keep your hair short. A dirty head often goes with long hair, and dirt breeds germs and insects.
17. Wash the hands and remove the dirt from under the finger nails before each meal.
18. Do not spit, or let others spit, on the floor of your tent or barracks.
19. Hang out in the sunshine, every other day if possible, your blankets and clothing. Germs and vermin do not thrive in the sunshine.
20. Do not let any part of your body become chilled. You can march or take exercise in wet clothes without bad results. But put on dry clothing as soon as you reach camp or stop exercising. Do not sit or lie on the damp ground.
21. Raise the sides of the tent (if living in a tent) every morning for several hours during pleasant weather. If in barracks raise windows. This lets in fresh and pure air. Fresh air and sunshine are the enemies of germs.
22. Clean your mess kit (knife, fork, spoon, plate, and cup) immediately after each meal.

Camping Suggestions.

After pitching your shelter (pup) tent, get inside and *level off the ground*. Cut a drain around the tent to carry off the water. This should be done even in pleasant weather. In case you do not ditch your tent, and a sudden rain comes up, your blankets may become wet, and you will, probably, lose some much-needed rest and sleep.

Preparing Your Bed.

After you have pitched your tent, get some hay, grass, straw, or leaves, and cover the floor. Place a poncho or raincoat on this, then one or two blankets on top of the poncho or raincoat on which to sleep. Use the remaining blankets as cover. The poncho next to the ground keeps the dampness from coming up from the ground, and chilling the body. Many men are careless about making a comfortable bed. You will be rewarded with a good night's sleep if you are zealous in making yourself comfortable.

COOKING.

When you go out hunting, fishing, or on a survey party some day very probably it may be your duty to prepare the evening meal for yourself and party.

In this day when men are using their wit more, perhaps, than ever before, bear in mind the following rule when you prepare a meal: When possible, in the field, let the important meals contain the following basis foods: 1st, bread or potatoes (starch); 2d, some kind of meat (protein); 3d, a vegetable, for instance tomatoes, onions, or peas, etc. (carbohydrate and mineral); 4th, and fruit of some kind (sugar). Lose no opportunity to get fresh milk and eggs.

Fried Bacon.

Put over the fire a clean, dry pan, and, when sizzling hot, lay in slices of bacon from which the rind has been cut. In a few seconds it will become transparent; then turn it over, cook a few seconds longer, and it is ready. If very salty bacon is used, lay the slices in the pan, cover with cold water, and bring to the boil. Drain, and then cook as described above.

Broiled Bacon.

Spear one or two slices of bacon with a fork, green stick, or anything long enough to keep your hands from being burned. After the fire has burned down to red embers, hold this a few inches from the heat until done.

Boiled Potatoes.

Potatoes boiled in the skins are more easily prepared and have higher food value than when peeled. Wash them carefully, cover with fresh water, and let boil about twenty minutes or until a fork can be easily stuck through them. Drain off the water, sprinkle with salt, replace the lid, and shake over the fire for a few seconds. They will then be dry and mealy.

Fried Potatoes.

Either raw, or cold boiled potatoes may be used. Peel, slice in thin slices, and drop into a pan containing a few spoonfuls of smoking hot fat. Cook over a hot fire for two or three minutes till nicely browned on both sides, then cover and cook more slowly until tender throughout. Turn often so they won't burn.

Baked Potatoes.

Bury in ashes and cover with hot embers or coals and leave for about an hour, or until they feel soft when squeezed. Another good plan is to pull the hot embers away, dig a shallow hole in the ground, place two or three potatoes in it, cover with a layer of dirt, push back the embers, and leave until done. This method requires two or three hours.

Coffee.

Allow a little more than an ordinary teacupful ($\frac{1}{2}$ pint) of water and one tablespoon of coffee to each person. When the water is boiling, add the coffee, and let simmer for about ten minutes. Add a little cold water to settle the grounds.

Boiled Onions.

Remove the dry skin from the onions, drop into boiling salted water, and cook twenty or thirty minutes in an uncovered vessel.

Fried Onions.

Slice cross ways in quarter-inch slices. Drop into pan containing a little hot fat, and turn over when brown.

Flapjacks.

To an ordinary teacup ($\frac{1}{2}$ pint) of flour, or meal, add a teaspoonsful of baking powder, a pinch of salt, and enough water to make a batter that will pour easily. Beat until thoroughly mixed. Drop a spoonful or two into a pan containing a little hot fat. Cook until bubbles appear on the top, then with a broad knife turn over, and let brown on the other side.

Biscuits.

To a teacup ($\frac{1}{2}$ pint) of flour add a teaspoonful of baking powder and a pinch of salt. Mix well and add enough cold water to make a dough that can be handled. Form into biscuits the size of an Ingersoll watch and place in a pan. Lay this on embers over which ashes have been scattered, cover with another pan, and spread hot embers over the top. In about fifteen minutes the biscuits should be puffed and nicely browned.

Camp Stew.

Cut up in pieces, the size of the end of your thumb, a couple of slices of bacon, a couple of medium-sized potatoes, and one onion. Drop the bacon into a hot pan

and brown on both sides, then add the potatoes, onions, and cover with water. Add a dash of pepper and salt to taste. Put on a lid and let simmer for half an hour or so.

Birds, Squirrels, etc.

To broil a bird or a squirrel, first clean, then run a green stick through it and hold it over hot embers. Cook until done. Keep turning to prevent burning. Sprinkle with salt.

A FINAL WORD.

We have given many suggestions and pointers in this chapter about camping. If you have learned the true value and appreciate the primary importance of the following, you have done splendidly:

1. Flies and mosquitoes are active and dangerous enemies.
2. Latrines must be kept free of flies and odors.
3. The water you drink must be absolutely pure.
4. Put every scrap of waste in the kitchen incinerators.
5. Have your tent or barracks and your company the cleanest and purest in camp

PART II
SECOND YEAR

CHAPTER VII.

INFANTRY DRILL REGULATIONS.

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INFANTRY DRILL REGULATIONS.

SCHOOL OF THE PLATOON.

95. In order to understand the movements described in the School of the Platoon, the student must become familiar with the following definitions and general rules:

Base: The element on which a movement is regulated. For instance, in executing "right front into line" the leading squad is the base.

Center: The middle point or element of a command. For instance, the center squad of a platoon of five squads in line would be the third squad from the right. In case there are six squads in the platoon, the 3rd squad from the right is likewise the center squad, the rule being that when there are an even number of squads (platoons) the right-center squad (platoon) is the center squad (platoon).

Column: A formation in which the elements are placed one behind the other. For example, a column of files (single men placed one behind the other); a column of squads (squads placed one behind the other) column of platoons (platoons placed one behind the other).

Flank: The right or left of a command in line or in column or the element on the right or left of the line.

Frontage: The space occupied by an element measured from one flank to the opposite flank. The frontage of a man is assumed to be 22 inches measured from the right to the left elbow and therefore does not include the 4 inches between all men in line.

The guides
of a column
of squads place
themselves on
the flank
opposite the
file closers Each
rank preserves
the alignment
toward the side
of the guide
Arrows indicate
the direction of
dress in each
rank.

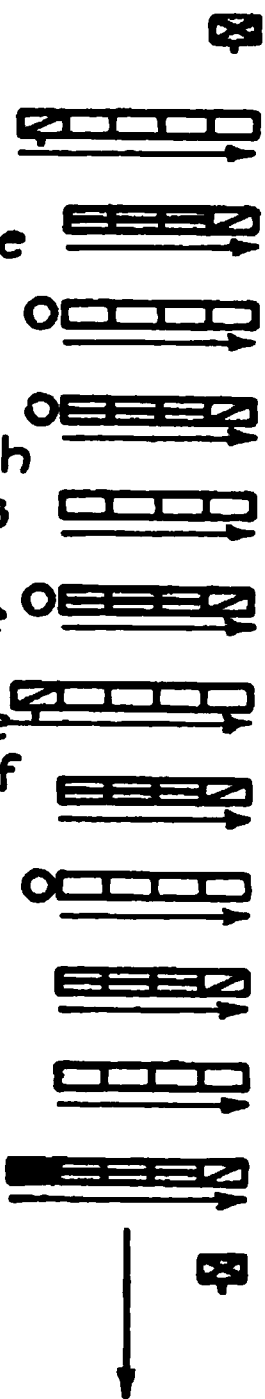


PLATE 167.—Direction of Dress in Column of Squads.

Guide: An officer, non-commissioned officer or private upon whom the command or elements thereof regulates its march. Notice that an officer may be a guide. This is often the case in battle or on practice marches. In the school of the squad a private (No. 1 front rank) is often the guide.

Head: The leading element of a column. To understand this definition one must remember that an element is a file, squad, section, platoon, company or larger body forming part of a still larger body.

Left: The left extremity or element of a body of troops.

Line: A formation in which the different elements are abreast of each other. The expression "abreast of each other" means on the same line. The other vital part of this definition centers on the word "element." A section may be an element. Therefore if the leading elements of several sections are on the same line it would be a line formation.

Point of rest: The point at which a formation begins. Specifically, the point toward which units are aligned in successive movements. For instance in executing "On right into line" the point of rest is the place where the leading squad is when halted.

Right: The right extremity or element of a body of troops.

96. **General rules.** Unless otherwise announced, the guide of a platoon in line is right. Therefore whenever the platoon is in any *line formation* the guide is right unless otherwise announced.

To march in line with guide other than as prescribed above or to change the guide the command is: Guide RIGHT (left or center).

When in column of squads, the guide in each rank is toward the side of the guide of the column. See Plate 172.

In successive formations into line, the guide is toward the point of rest. For example, if the platoon is executing "On left into line," the guide would be to the left.

The announcement of the guide, when given in connection with a movement, follows the command of execution for that movement. For example, 1. *Squads right*, 2. MARCH, 3. *Guide*, 4. LEFT.

97. Our table of organization contemplates a war strength and a peace strength organization. The latter is the skeleton organization for the former which comes into existence during war when there are plenty of men. For instance, during peace our companies may consist of two platoons of four squads each, whereas upon the outbreak of war they would be expanded into companies of four platoons of six squads each. In this book the war strength organization is assumed for the purpose of maximum instruction to the student.

98. The platoon at war strength comprises a platoon headquarters and six squads. The platoon headquarters comprises one lieutenant (platoon leader), one platoon sergeant, two sergeants (platoon guides), two corporals and four privates (runners).

A runner is a soldier who carries messages during battle or battle exercises.

99. The platoon in line is formed in double rank. It is divided into squads of four files each, beginning with the right flank. Platoons of more than three squads are divided into two sections. If the number of squads in the platoon is even the sections comprise an equal number of squads; if the number of squads is odd, the right section is the stronger.

The two sergeants of platoon headquarters (platoon guides) act as section leaders, the two corporals act as section guides.

100. In each platoon men are arranged as far as practicable according to height from right to left, the tallest on the right. Departures from this rule are authorized for the purpose of assigning men to the duties which they are best fitted to perform, and in order to maintain the integrity of squads. If any squad contains less than six men it is either increased to that number by transfers from other squads or from the privates in the file closers, or is broken up and its members assigned to other squads or posted in the line of file closers. These squad organizations are maintained by transfers, if necessary, until the platoon becomes so reduced in numbers as to necessitate a new division into squads. No squad will contain less than six men.

101. For purposes of formation or drill, the runner may be used to fill blank files.

102. Sections and squads are numbered consecutively from right to left in *each* platoon and these designations do not change. For instance, No. 2 squad (the second from the right when the platoon forms) remains No. 2 squad even though it becomes during the drill the 3rd squad from the right. For convenience in giving commands and for reference, the designation right, center and left when in line and leading, center, rear, when in column, are applied to the actual right, center, left, leading or rear section or squad.

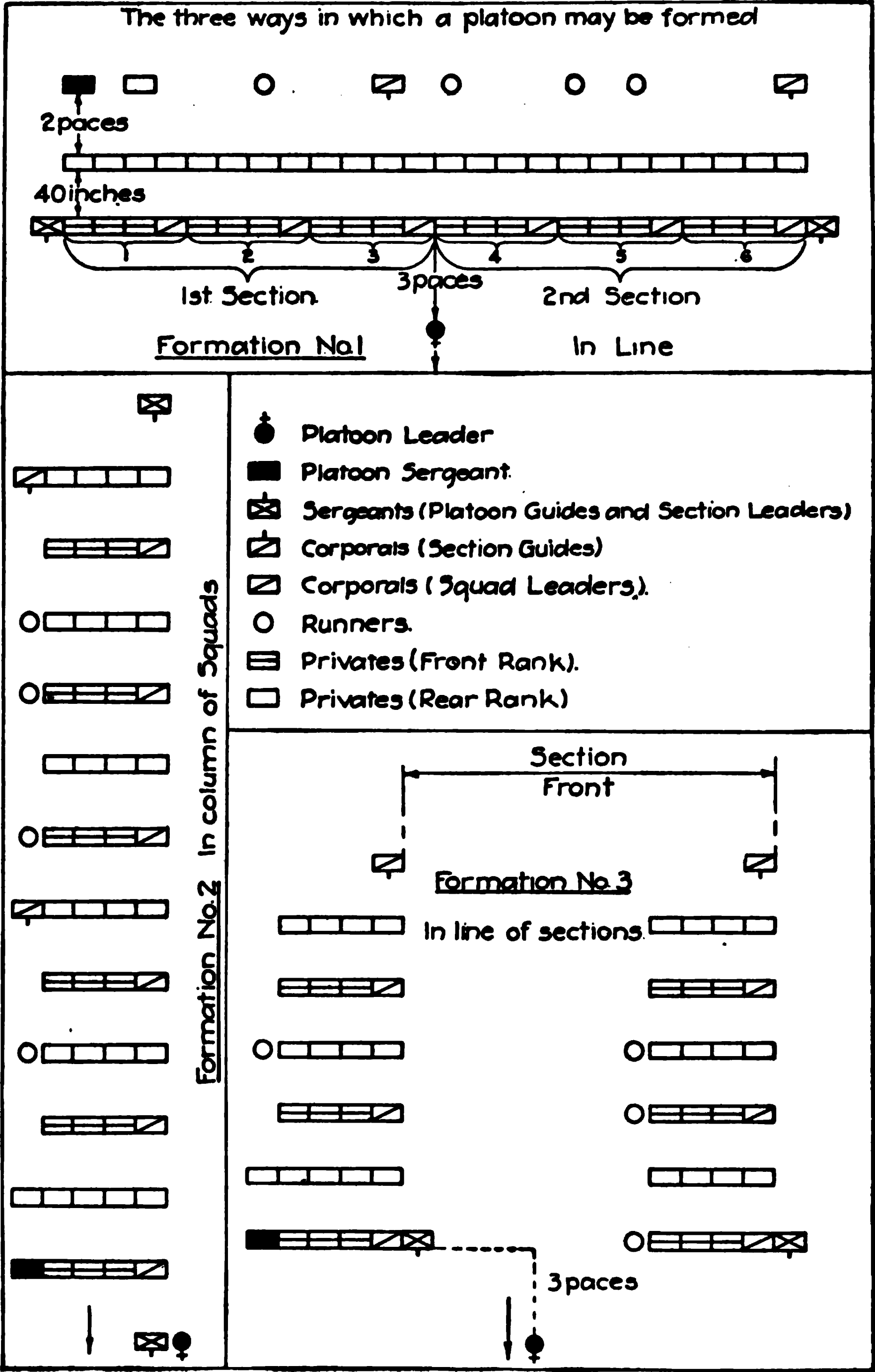


PLATE 168-Formations of the Platoon.

103. The formations of the platoon are *line*, *line of sections*, and *column of squads*, *twos* or *files*. The principle close-order formations are the line and column of squads. The line of sections is a formation taken preparatory to deployment or for purposes of the approach march. It is most important that the student carefully study Plate 168 so that the name of any platoon formation will bring to his mind a mental picture of that formation. With an accurate knowledge of each formation the student will have little trouble with the School of the Platoon, and without that knowledge he will find it exceedingly hard. For instance the student might be called upon to give the commands for and explain how to form line of sections to the front from a column of squads. It is apparent that he must not only know but be able to visualize the two formations—"line of sections" and "column of squads"; otherwise he cannot even announce the proper command. The beginner often makes the mistake of failing to learn names of the various formations and what they are. It is not sufficient to have a general knowledge of the formation; the position of the platoon leader, non-commissioned officers and file closers, should also be known.

104. Section drills will be held for the purpose of giving section leaders an opportunity to command their sections.

105. When the platoon is marching on roads or trails, the file closers take position at the head or rear of the column as directed by the platoon leader.

Close-Order Rules.

106. The platoon executes the *halt*, *rests*, *facings*, *steps* and *marchings*, *manual of arms*, *loadings* and *firings*, *takes intervals* and *distances* and *assembles*, *increases* and *diminishes intervals*, *resumes attention*, *obliques*, resumes the direct march, preserves alignments, *kneels*, *lies down*, *rises*, *stacks* and *takes arms*, as explained in the School of the Soldier and Squad, substituting in the commands *platoon* for *squad*.

The same rule applies to sections, detachments, details, etc., substituting their designation for squad in the commands. In the same manner, these execute the movements prescribed for the platoon whenever possible, substituting their designations for platoons in the commands.

A platoon of less than four squads is led by the platoon leader as a single section, but retains the designation of platoon. The sergeants assist in fire control; the other file closers place themselves in the skirmish line.

107. In section movements, the post of the section guide is at the rear of the section.

108. The guides of a column of squads place themselves on the flank opposite the file closers. To change the guides and file closers to the other flank, the platoon leader commands: 1. *File closers on left (right) flank*, 2. MARCH. The file closers dart through the column; the platoon leader and guides change to the other flank.

In column of squads, each rank preserves the alignment toward the side of the guide.

109. Men in the line of file closers do not execute the loadings or firings.

Guides and enlisted men in the line of file closers execute the manual of arms during the drill unless specially excused, when they remain at the order. During ceremonies they execute all movements. Men armed with the automatic rifle do not execute the manual of arms at either drills or ceremonies.

110. In taking intervals and distances, unless otherwise directed, the right and left guides, at the first command, place themselves in the line of file closers, and with them, take a distance of four paces from the rear rank. In taking intervals, at the command MARCH, the file closers face to the flank and each steps off with the file nearest him. In *assembling*, the guides and file closers resume their positions in line.

111. In movements executed simultaneously by sections (as *sections*, *column right*, section leaders repeat the preparatory command (*column right*, etc.), applicable to their respective sections. The command of execution is given by the platoon leader only. As the first of the commands indicates, it is to be a simultaneous movement, i. e., to be executed by each section at the same time. In this case the leader of each section would command 1. *Column right*. The command MARCH of the platoon leader would then start the movement.

Alignments.

112. The alignments are executed as prescribed in the School of the Squad, the guide being established instead of the flank file. The rear-rank man of the flank file keeps his head and eyes to the front and covers his file leader.

At each alignment the platoon leader places himself in prolongation of the line, two paces from and facing the flank toward which the dress is made, verifies the alignment and commands, FRONT. Notice that the platoon leader always gives the command FRONT. The rear-rank man and the guide on the flank away from the point of dress, do not bring up their hands to the hip at the command dress. Nor do the men at the point of dress in left dress bring up their hands to the hips.

Caution. The inexperienced instructor often gives the command: *Right (left)*

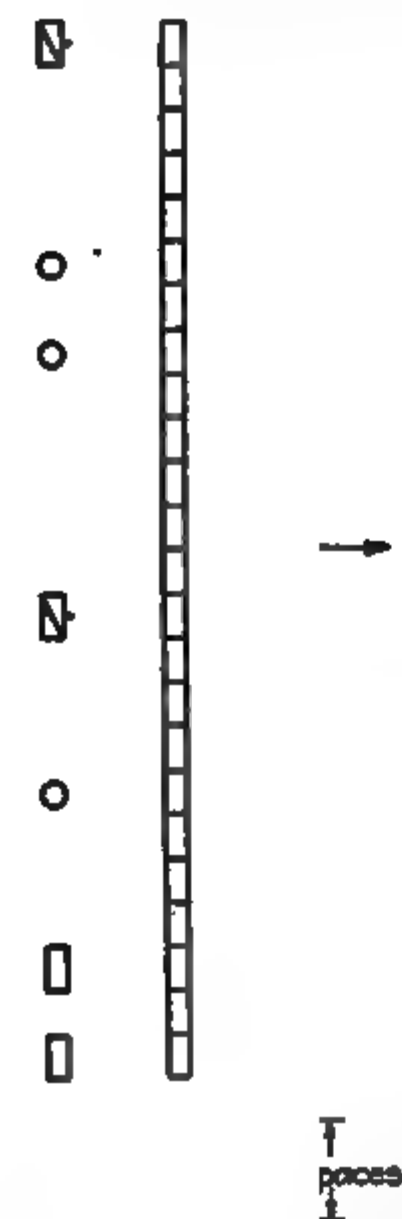
DRESS and then posts his guide. This creates confusion and makes it difficult for the men in ranks. The guide should be posted first and then the commands for the dressing announced. In dressing your platoon seek to establish the line with the first four or five men in the front rank. This gives the other men something upon which to dress and thereby facilitates the movement. When a man is in front of or behind the line, call him by name and direct him to move up or back. Everyone else should stand fast unless you command "carry it on" or "up on the left (right)."

113. In studying the following movement, as well as all others, in which a command is given, the command itself should be memorized. Beginners often think it sufficient to know the meaning of the command, but as officers you will be expected to memorize all commands.

Line.

114. Being in line, to turn the platoon on a fixed pivot, the command is: 1. *Platoon right (left)*, 2. MARCH, 3. *Platoon*, 4. HALT or 3. *Forward*, 4. MARCH. The pivot of this movement is the right-flank man of the front rank and not the guide.

At the second command, MARCH, the right-flank man in the front rank faces to the right in marching and marks time; the other front-rank men oblique to the right (execute right oblique), place themselves abreast of the pivot and mark time facing to the front. (It is a common error to look down at the toes while marking time.) In the rear rank, the third man from the right, followed in column by the second and first, moves straight to the front until in rear of his front-rank man, when all face to the right in marching and mark time. (They execute squad right.) The remaining men of the rear rank move straight to the front four paces, oblique to the right (execute a right oblique), place themselves abreast of the third man from the pivot in the rear rank, cover their file leaders



Position of the Platoon Leader in verifying the alignment of the platoon at Right Dress. The platoon acting alone

PLATE 169.

Position of Platoon Leader in Dressing His Platoon.

and mark time. The right guide steps back, immediately after the command MARCH, takes post on the flank and marks time.

Being in line to turn the platoon:



The dotted lines indicate the original formation of the Platoon. The solid lines indicate the formation of the Platoon when the movement is half completed.

Notice that the part of the platoon which has not completed the movement is perpendicular to the part that has.

The rear rank marches forward 4 paces before obliquing.

PLATE 170.—1. Platoon Right, 2. MARCH.

The fourth command, MARCH, is given when the last man arrives on the line. As no advance is made until the command MARCH is given, we call this movement *turning on a fixed pivot*.

The command HALT may be given at any time after this movement begins; only those halt who are in the new position. Each of the others halt upon arriving on the line, aligns himself to the right, and executes *front* without command.

This a very hard movement to execute properly because:

1. The front-rank men fail to make an exact right (left) oblique or to step off promptly at the first command MARCH.

2. The rear rank (except the three men on the pivot flank) fail to march four paces to the front before executing the oblique.

Caution. Give the command for halting or marching forward as soon as the last man arrives on the line, otherwise the step will be lost as the tendency is to increase the cadence when marking time. Don't give this movement at a double time to new men.

The right (left) guide is the pivot of this movement. At the second command he steps off in the new direction (executes by the right or left flank if marching), and takes up the half step (15 inches).

At the second command each front-rank man (the pivot guide excepted) executes a right (left) oblique, advances until in rear of his position where he executes a second right (left) oblique and upon arriving abreast of the pivot man takes up the half step.

The rear rank and file closers execute the movement in the same manner and on the same ground as the front rank. Therefore the rear rank marches forward (1 pace and 10 inches) until it reaches the ground where the front rank executed its first oblique, then each man (rear rank) executes a right (left) oblique, moves forward until in rear of his position when he executes a second right (left) oblique and upon arriving abreast of the pivot man rear rank, takes up the half step.

All take the full step at the fourth command MARCH.

In turning to the left on a moving pivot, each rank dresses to the left until the fourth command MARCH and after that the dress is to the right unless otherwise announced.

This movement is often confused with turning on a fixed pivot (platoon right) in which the rear rank marches forward four paces before obliquing whereas this movement is executed on a *moving pivot* and the rear rank executes its obliques on the same ground and in the same manner as the front rank.

Common errors. 1. The men of the front rank do not make two separate and distinct obliques as required.

2. The rear-rank men simply follow their front-rank men without making distinct obliques as required.

3. The half step of the guide is too long.

4. The men fail to continue at a full 30-inch step until they arrive on the line.

5. Upon arriving on the line the men have a tendency to charge ahead instead of taking a proper half step.

116. *Right (left) half turn* is executed in a similar manner. The pivot man makes a half change of direction to the right and the other men quarter changes in obliquing.

117. Being in line to form column of squads: 1. *Squads right (left)*, 2. MARCH, or 1. *Squads right (left)*, 2. MARCH, 3. *Platoon*, 4. HALT.

Executed by each squad as prescribed in the School of the Squad.

The file closers take posts on the pivot flank, abreast of and 4 inches from the nearest rank, whereas, the guides are on the opposite flank in front of and behind the left file of the leading and rear squads. If the command is "squads right" the leading guide places himself in front of the left file of the leading squad and in front of the right file of the leading squad if the command is "squads left."

Cautions. 1. Pivot men should hold the pivot, and not move forward or backward to adjust the alignment.

2. If halt is to be given, the second preparatory command (platoon) should be given immediately after the command MARCH and the command HALT should be given as the last man arrives on the line. In other words don't allow your men to mark time for several minutes, but halt them when the movement is completed.

3. Remember, in the movements "squads right" and "squads left" the command MARCH should be given on the right and left foot respectively.

118. Being in line to form column of squads and change direction, the command is: 1. *Squads right (left), column right (left)*, 2. MARCH.

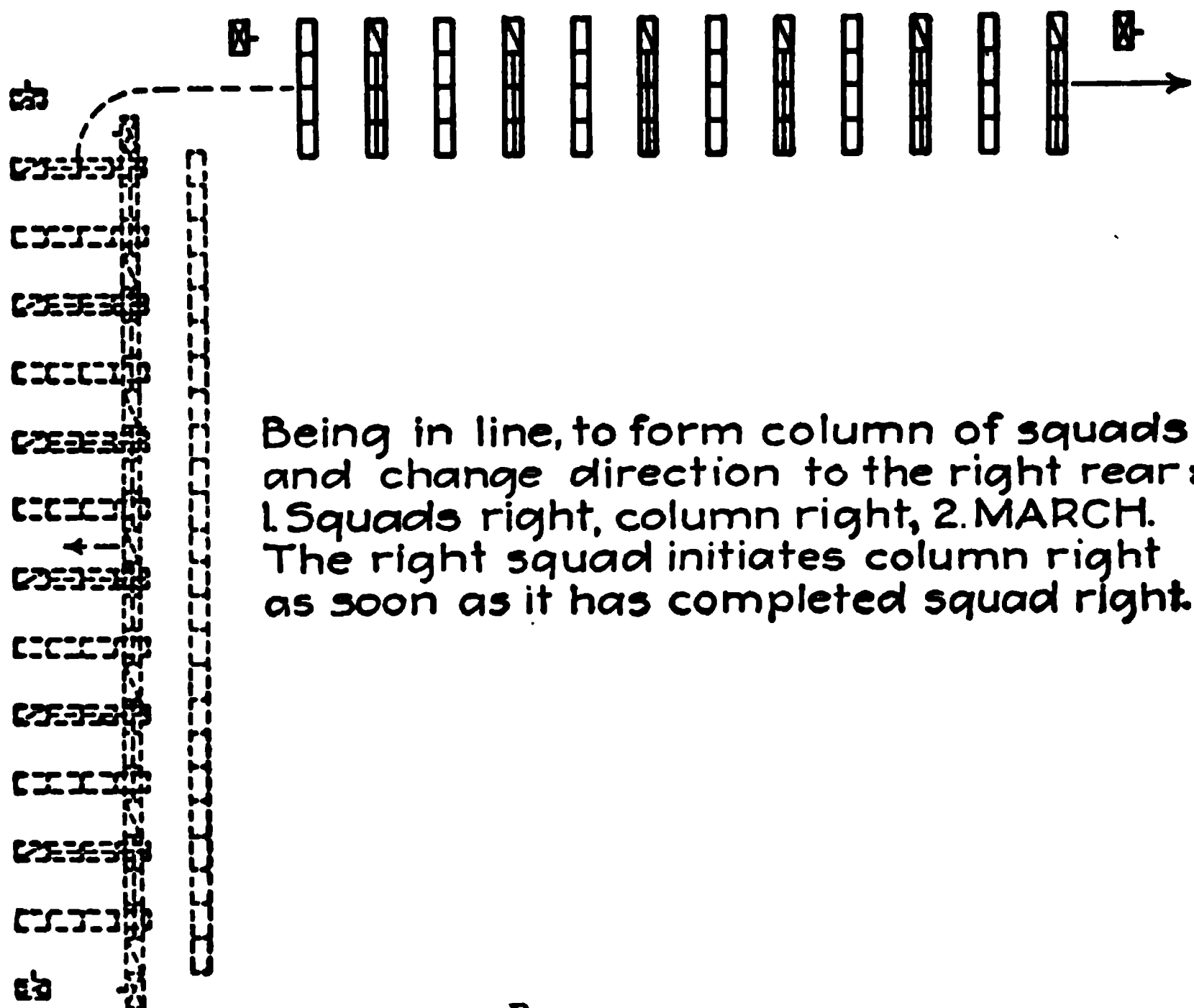


PLATE 172.

At the command MARCH, each squad executes squad right (left) thus forming a column of squads which immediately (as soon as squad right is executed) initiates column right (left).

In this movement the guides are on the left flank of the column if the first command is squads right and on the right flank if it is "squads left." The leading guide must be careful to place himself accurately 40 inches in front of the proper file and not to take up the half step until the file on the marching flank is abreast of the leading squad.

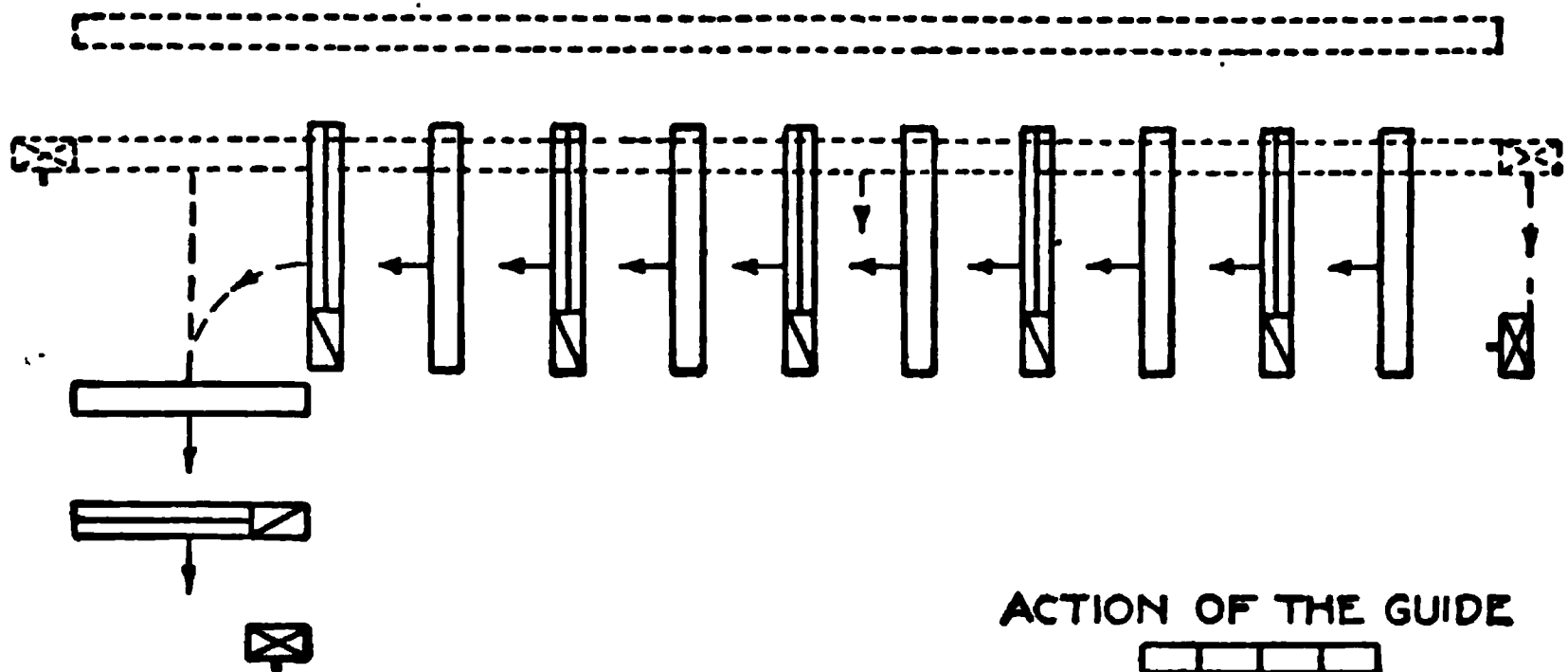
Cautions. 1. In squads right, column right, number one of the right squad, front rank, must face to the right and mark time until the completion of the squad right, then faces to the right in marching taking up the half step in new direction, stepping off as flank man comes on line.

2. Each rank thereafter as it arrives at the turning point independently executes a proper right turn.

3. March square up to the pivot.

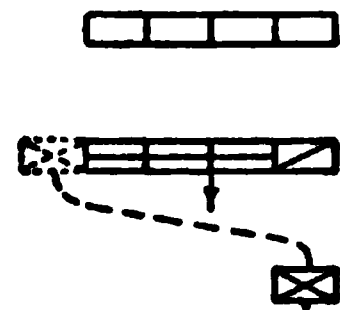
119. Being in line to form column of squads and move forward, the command is: 1. *Right (left) by squads*, 2. MARCH.

The platoon being in line, to form column of squads to the front:
1. *Right (Left) by Squads*, 2. MARCH.



The right squad marches forward.
The remaining squads execute,
squads right, column left.

ACTION OF THE GUIDE



The right guide posts
himself in front of No. 4
Front Rank of the First
Squad and then takes
4 short steps.

PLATE 173.

The success of this movement depends very largely on the guide and leading squad. Each must do exactly the right thing at the proper time or a jam or a stretching out of the column will ensue.

At the command MARCH, the right squad marches forward; the remainder of the platoon executes *squads right, column left*, and follows the right squad. The right guide when he has posted himself in front of the right squad (left file) takes four short steps, then resumes the full step; the right squad conforms. The guide takes these four short steps to hold the right squad back and thus by delaying the movement permits the other squads to execute *squads right* and follow the leading squad without losing distance. However, the *right squad* steps off with a 30-inch step which is continued until the guide gets into place, when this squad takes the four half steps as indicated above. If the command is "right by squads" the leading guide places himself in front of the left file and in front of the right file of the leading squad if the command is "left by squads."

Caution. Watch the rear ranks of the squads. They must execute a right or left turn and not a squad right or left at the turning point.

120. Being in column of squads, to change direction, the command is: 1. *Column right (left)*, 2. MARCH.

At the command MARCH, the front rank of the leading squad turns to the right on a moving pivot (executes right turn) as in the School of the Squad, the other ranks march forward and without command, turn successively (one after another) on the same ground and in a similar manner.

This is a very difficult movement to execute correctly because the ranks after turning either take the full step too soon causing the column to stretch out, or take the half step too long, causing a jam at the pivot. The solution is for each squad to execute "right turn" correctly. The leading guide must not take up the full step until the leading squad has completed its turn. The leading guide changes

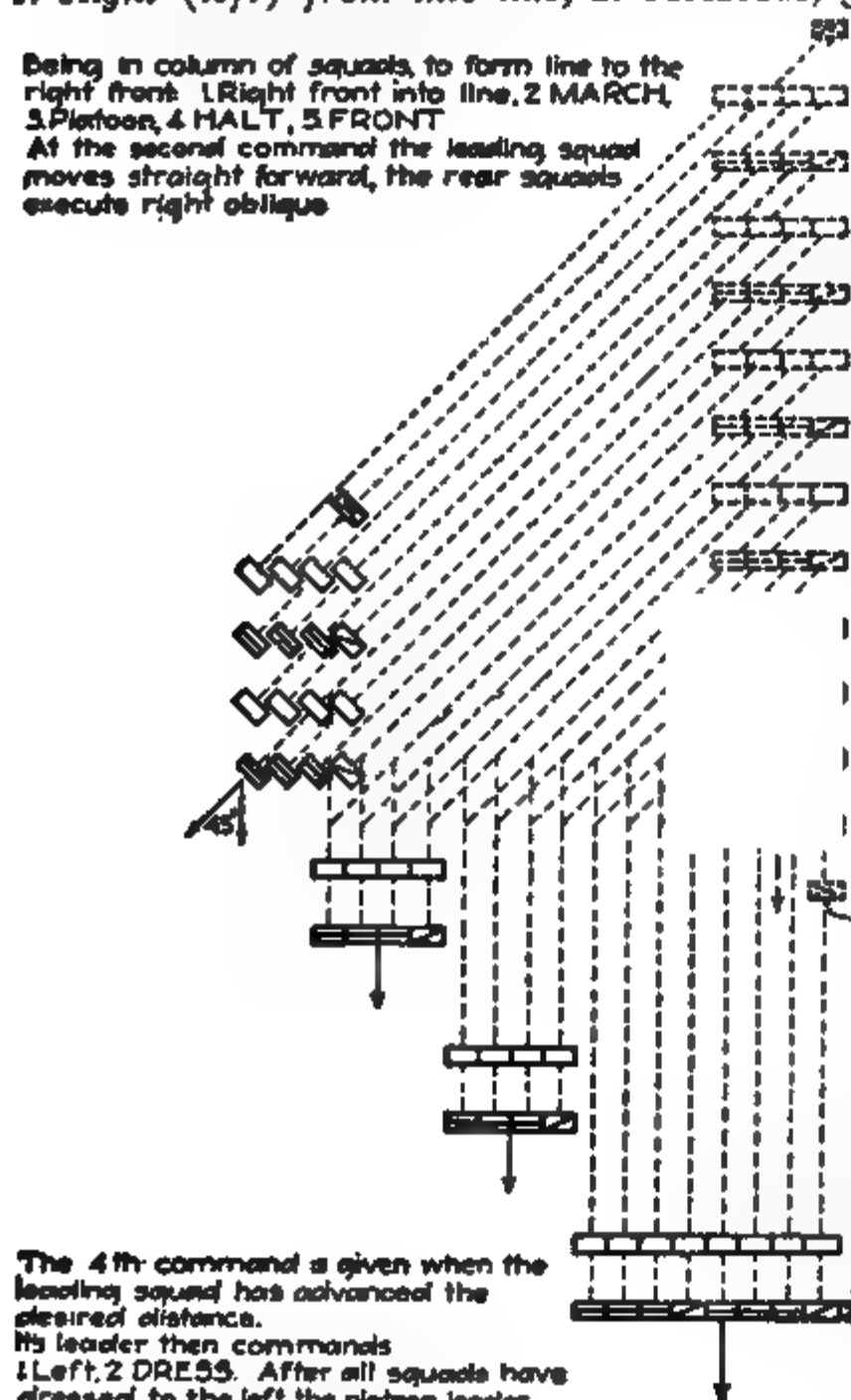
direction at the command MARCH, places himself in front of the proper file at 40 inches distance and resumes his duties as guide when the leading squad takes up the full step.

Caution. This movement (column right) can be executed the easiest when the command MARCH is given on the right foot so that the pivot man of the leading squad can execute "by the right flank." Correspondingly the command MARCH should be given on the left foot for the movement "column left."

121. Being in column of squads, to form line to the front, the command is: 1. *Right (left) front into line*, 2. MARCH, 3. *Platoon*, 4. HALT, 5. FRONT.

Being in column of squads, to form line to the right front: 1. *Right front into line*, 2. MARCH, 3. *Platoon*, 4. HALT, 5. FRONT.

At the second command the leading squad moves straight forward, the rear squads execute right oblique.



The 4th command is given when the leading squad has advanced the desired distance. Its leader then commands 1. *Left*, 2. DRESS. After all squads have dressed to the left, the platoon leader commands 3. FRONT.

PLATE 174.

corporal who then commands: 1. *Left (right)*, 2. DRESS. All dress on the base squad. Each corporal should take a pride in bringing his squad up to its exact place in the line, halting and dressing it correctly.

All execute FRONT at the command of the platoon leader.

This is a successive movement. If executed at a double time, the leading squad remains in quick time and if the platoon is at a double time the leading squad executes quick time at the command MARCH; other squads continue at a double time until they arrive on the line when they take up the quick time.

It is recommended that the rear guide take post on the flank of the rear squad away from the point of rest at the corporal's command "forward" and that he halt with it. He has fulfilled his duties in regard to step, pieces and cover as soon as the rear squad is disengaged and moves forward.

At the command MARCH the leading squad moves straight to the front, its corporal having cautioned "continue the march" if marching and "forward" if halted. The rear squads execute right oblique, the corporals having cautioned "right oblique." Notice that the leading squad moves forward whether the platoon is marching or halted. The leading guide takes his post on the left of the leading squad at the command MARCH if the movement is Right Front Into Line and on the right of the leading squad if the movement is Left Front Into Line.

The platoon commander gives the command HALT when the leading squad has advanced the desired distance; it halts and its corporal commands *Left (right)* DRESS. It is a common error for the men to anticipate the command *Left (right)* DRESS, and thus move up on the line before the corporal gives the command. The corporal of the leading squad should remember that he dresses his squad on the guide who places himself on the correct flank.

Just before each rear squad arrives opposite its place in line the corporal commands "forward" and adds MARCH when it is opposite its place in line. Each squad is halted on the line by its

122. Being in column of squads to form line to a flank the command is:
1. *Squads right (left)*, 2. MARCH.

Executed by each squad as described in the School of the Squad.

If the platoon be formed in line toward the side of the file closers, they dart through the column and take posts in rear of the platoon at the second command.

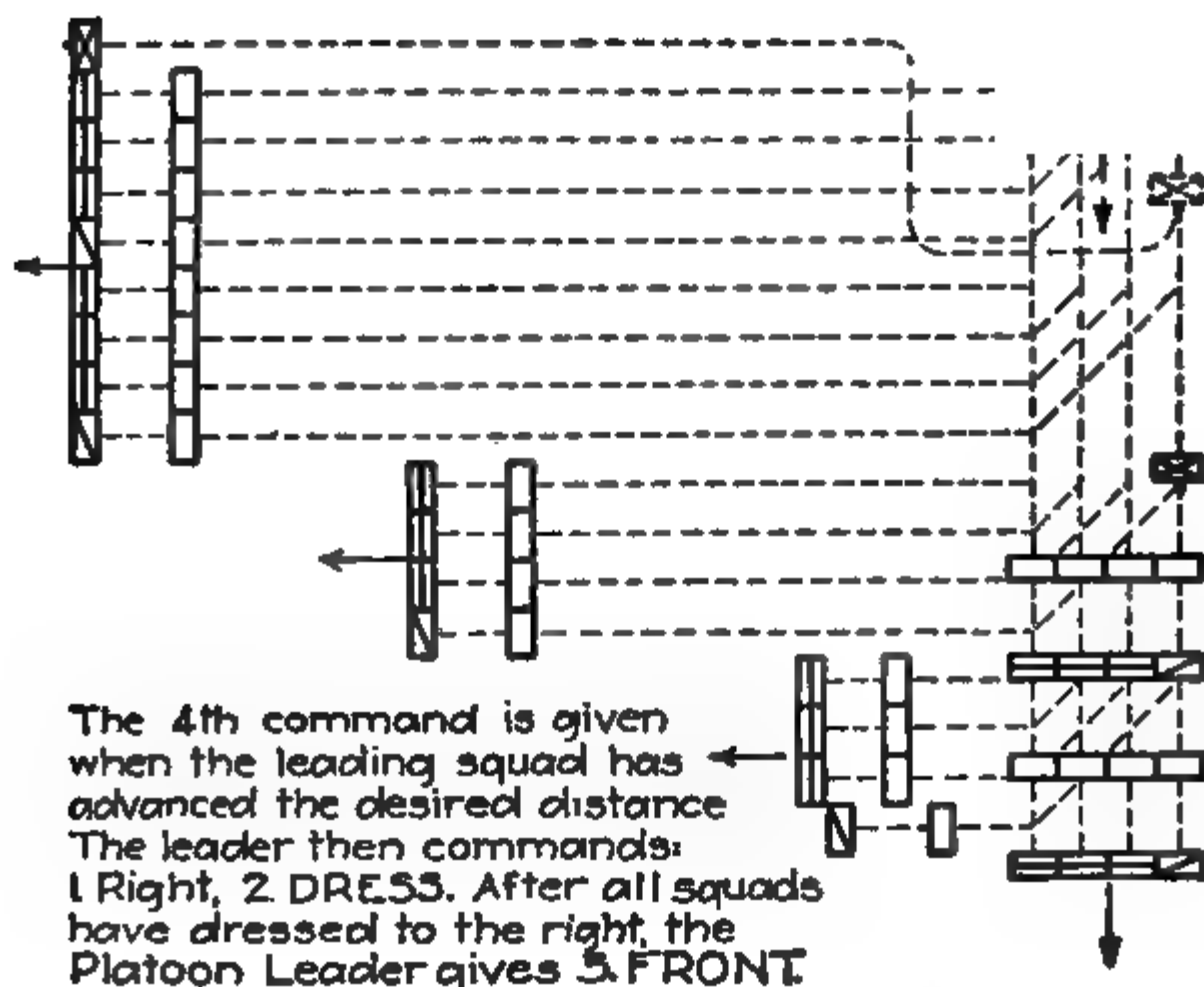
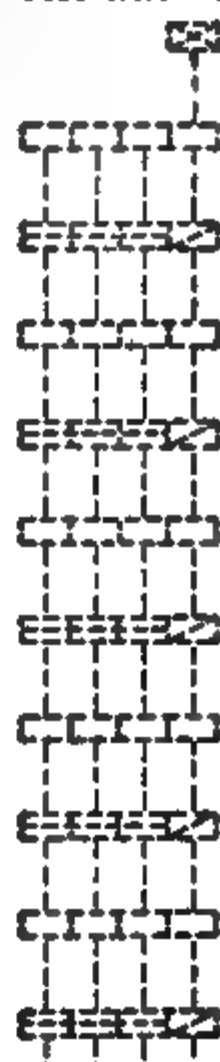
Caution. 1. Remember that Squads Right can be executed best when the command MARCH is given on the right foot and on the left foot for Squads Left.

2. When the platoon is to be halted, give the command HALT so that the last man on the marching flank will halt upon reaching the line and thus avoid any unnecessary marking time.

Being in column of squads, to form line on the right:

1. On right into line, 2. MARCH, 3. Platoon, 4. HALT, 5. FRONT.

At the second command, the leading squad executes Right Turn. The squads in rear move straight forward until opposite their places in line when they execute Right Turn under command of their Corporals.



The 4th command is given when the leading squad has advanced the desired distance. The leader then commands: 1 Right, 2 DRESS. After all squads have dressed to the right, the Platoon Leader gives 3 FRONT.

123. Being in column of squads, to form line on right or left, the command is: 1. *On right (left) into line*, 2. MARCH, 3. *Platoon*, 4. HALT, 5. FRONT.

This movement will be explained for "On Right Into Line" and after studying the explanation the student should work it out for "On Left Into Line."

At the first command "on right (left) into line" the corporal of the leading squad commands "right turn" whether at a halt or marching. The corporals of the other squads command "forward" if halted and caution "continue the march" if marching.

At the second command MARCH the leading squad turns to the right on a moving pivot (executes right turn). The platoon leader gives the commands, 3. *Platoon*, 4. HALT, when the leading squad has advanced the desired distance in the new direction. It halts and the corporal then commands, 1. *Right*, 2. DRESS. The leading guide takes his post on the right of the leading squad at the second command (MARCH).

The squads in rear continue to march straight to the front keeping in step with the leading squad and dressing on the side away from the file closers. Just before arriving opposite the position of his squad in line, each squad leader commands "right turn" and adds MARCH when in rear of the left file of the preceding squad. Each squad is halted on the line by its corporal who then commands 1. *Right*, 2. DRESS. Care must be taken to halt on or in rear and not ahead of the line, and that all men stand fast until the command DRESS is given. All dress on the base squad and execute FRONT at the command of the platoon leader. There are two very common errors in dressing to which attention should be called:

1st. New men in their eagerness to do everything well go about dressing much too fast. Dressing should be done deliberately. That does not mean that men are supposed to be slow. Time is saved and appearance improved by being alert and deliberate.

2nd. New or inexperienced men by placing the palm of the left hand on the hip and forcing the left elbow well to the front (so as to be parallel to the body) frequently give the men on their left some jabs in the side in dressing. That is rarely done intentionally, but attention should be called to the fact that each man should be considerate of the other man.

It is recommended that the rear guide take his post on the flank of the rear squad when that squad executes right turn and that he halt with it.

The movement 1. *On right (left) into line*, 2. MARCH, 3. *Platoon*, 4. HALT, 5. FRONT is an exception to the general rule about the leading squad remaining at quick time when successive movements are executed at a double time. When on right (left) into line is executed at a double time the leading squad takes up or continues the double time until halted. This is necessary in order that the squads in rear will not be blocked.

124. The student is cautioned that there are only five authorized formations for the platoon, namely, line, line of sections, and column of squads, twos or file. The principal close-order formations are the line and the column of squads. The line of sections is a formation taken preparatory to deployment or for purposes of the approach march.

125. We wish to place special emphasis on the beginner learning at this time the formation "Line of Sections."

126. In section movements, the post of the section guide is at the rear of the section. He keeps the section closed up.

127. In movements executed simultaneously by sections (as sections, column right), section leaders repeat the preparatory command (column right, etc.), applicable to their respective sections. The command of execution is given by the platoon leader only.

128. Being in column of squads to form line of sections to the right (left) the command is: 1. *Sections, column right (left)*, 2. MARCH. This is a simultaneous movement as each section executes the same movement at the command MARCH. The preceding movement (On Right Into Line) was a successive movement. The student should understand the difference between a successive and a simultaneous movement.

This and similar section movements are often difficult for the beginner to understand because he does not have clearly in mind two things, namely, the formation the platoon is in (column of squads), and the desired formation (line of sections). If you get these two formations clearly in mind you will have no trouble remembering the proper commands for this movement as well as how it is executed. Remember that each section leader must give the necessary commands for his section.

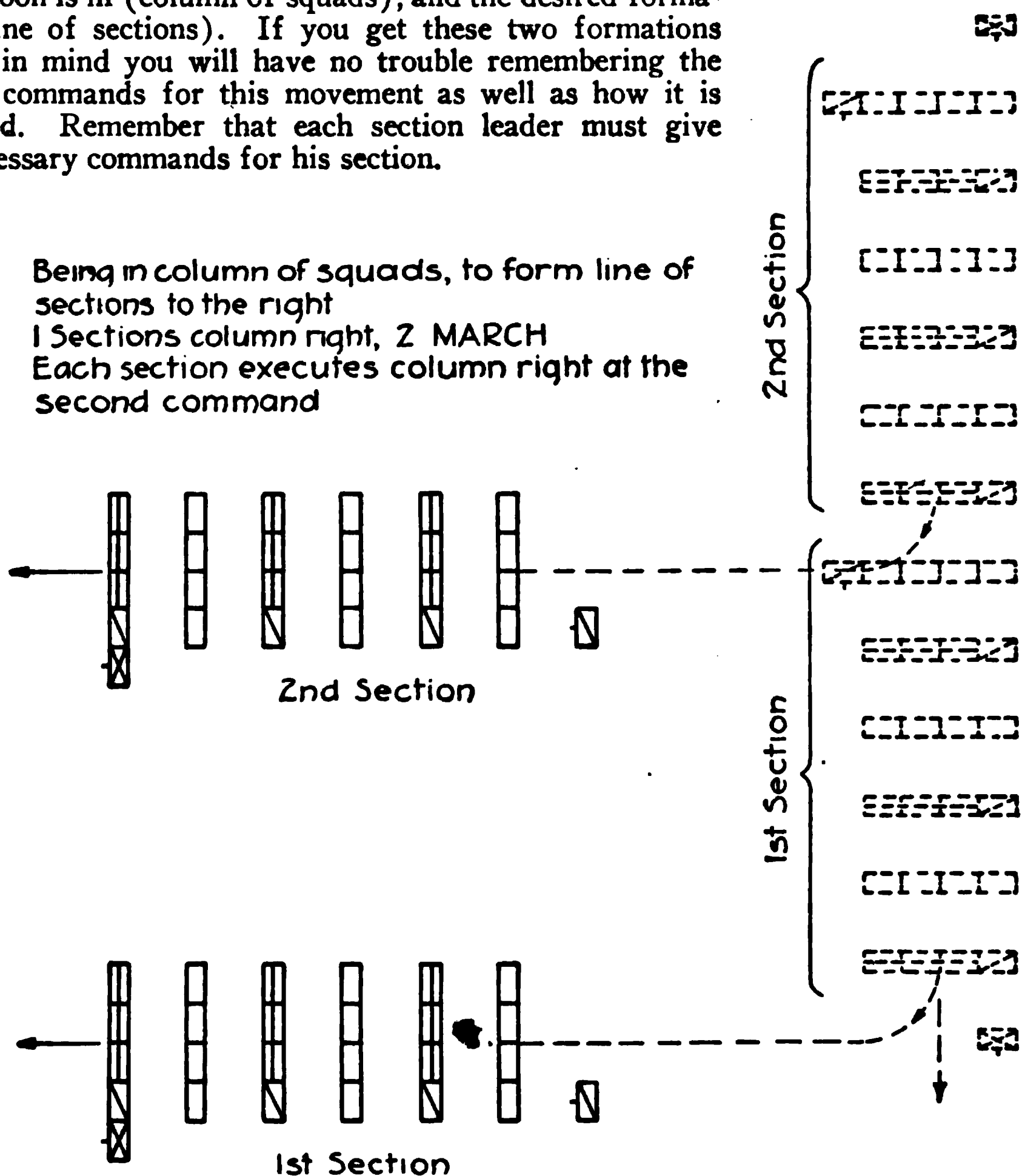


PLATE 176.

When the platoon leader announces the new formation by his first command "Sections column right (left)," each section leader commands "column right" and makes certain that his leading squad understands that it is to execute a right turn. At the command MARCH of the platoon leader each section executes column right, the section leaders and guides take their posts at the head and rear of their sections respectively. The guide of the platoon, unless otherwise announced, is to the right.

Caution. Before giving this movement the platoon commander should see that each section has a guide in the file closers and that section leaders and guides take correct posts after the command MARCH.

129. Being in column of squads, to form line of sections to the front, the command is: 1. *Line of sections (so many paces)*, 2. *Right (left)*, 3. MARCH, 4. *Platoon*, 5. HALT.

Being in column of squads, to form line of sections to the right front:
1. Line of sections (so many paces),
2. Right, 3. MARCH, 4. Platoon, 5. HALT.
At the third command, the leading section moves straight to the front and halts at the fifth command. The rear section is conducted by its section leader, in column of squads to the right front and is halted at the prescribed interval abreast of the leading squad.

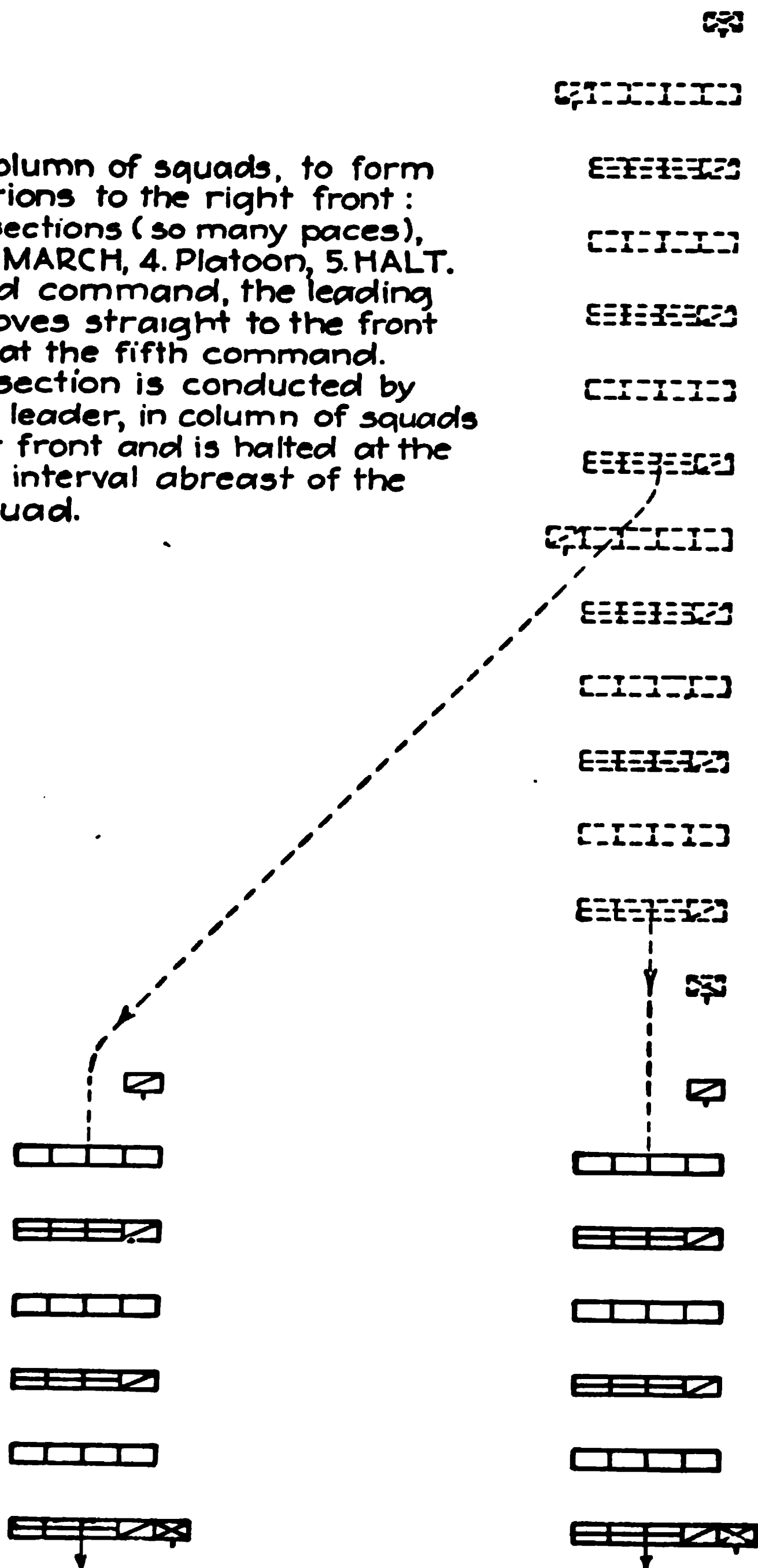


PLATE 177.

Get clearly in mind the formation you are in and the one desired and it will be easy to recall the correct commands and how the movement is executed.

The section leaders should be able to analyze a command for a section movement in such a manner as to assist them in giving the correct commands. Let us analyze this command as we explain the movement.

The first command (line of sections so many paces) indicates the new formation of the platoon to be "line of sections with so many paces interval." The command "right" indicates that the rear section will be on the right of the leading or base section which moves forward because the last command is to halt the platoon.

Therefore at the first and second commands (line of sections—right) the leader of the leading section commands "forward" if halted and "continue the march" if marching. The leader of the rear section commands "column half right" or "column half left."

The leading section halts at the command of the platoon leader. The rear section is halted by its leader at the prescribed interval on the right of the leading section. If no interval be indicated in the command it forms at the section frontage from the leading section. When this is the case the command will be: 1. *Line of sections*, 2. *Right (left)*, 3. MARCH, 4. *Platoon*, 5. HALT.

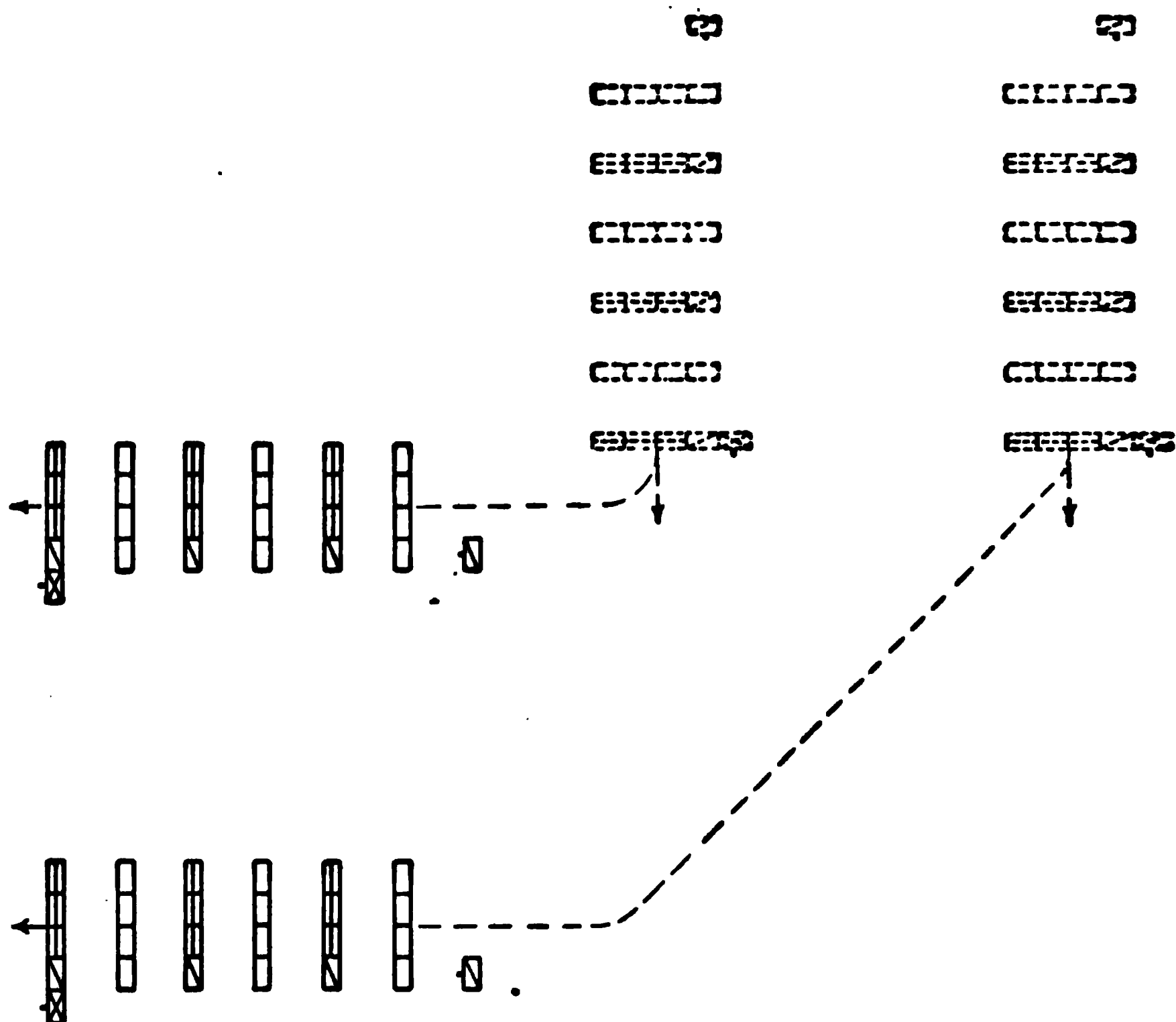
130. Being in line of sections (in column of squads) to change direction the command is: 1. *Platoon right (left)*, 2. MARCH, 3. *Platoon*, 4. HALT.

This movement is very easy as it is merely a change of front and not of formation. The platoon is in "line of sections" and the leader wishes to keep it in that formation but change the direction to the right or left.

At the first command (platoon right) the leader of the right section commands "column right." The leader of the left section commands "column half right" and at the platoon commander's command MARCH, moves his section by the shortest route to its place abreast of the right section.

The platoon leader gives the command (HALT) when the right section has advanced the desired distance in the new direction; that section halts; the other section is halted by its leader when it arrives on the line.

As this is a successive movement, the right section marches in quick time if the movement is executed in double time.



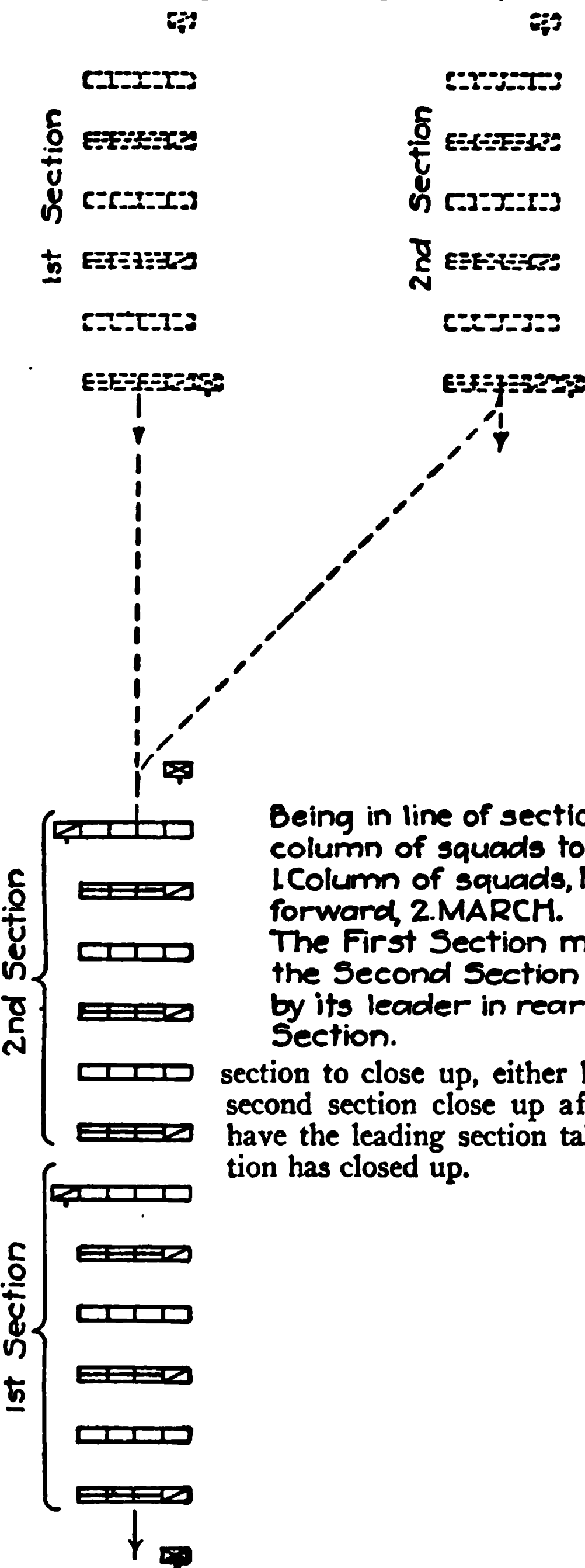
Being in line of sections, to change direction to the right:
1. Platoon right, 2. MARCH, 3. Platoon, 4. HALT.

The right section executes column right at the second command. The left section is conducted by the shortest line to its position abreast of the right section. The fourth command is given when the right section has moved the desired distance in the new direction; that section halts; the left section halts upon arriving on the line.

PLATE 178.

131. Being in line of sections to form column of squads to the front, the command is: 1. *Column of squads, first (second) section, forward*, 2. MARCH.

The first thing to do is to get clearly in mind the formation you are in, namely,



“line of sections” with each section in column of squads and the formation you are to get in, namely, “column of squads.” The first command, 1. *Column of squads, first (second) section, forward*, indicates the desired formation and the leading section when the column of squads is formed. Therefore, at the first command, the leader of the first section commands “forward” if halted and “continue the march” if marching; the leader of the left section, assuming it is on the left, commands “column half right” and conducts his section, after the command MARCH to its place in rear of the leading section.

If the interval between sections before this movement is executed is greater than normal (section front less one squad) it will be impossible for the left section to close up to 40 inches on the leading section without

double timing which is not authorized unless ordered. In this case the rear section should follow the leading section at an increased distance. The platoon commander should, if he desires the second

Being in line of sections, to form column of squads to the right front 1. *Column of squads, First Section, forward*, 2. MARCH.

The First Section moves forward, the Second Section is conducted by its leader in rear of the First Section.

section to close up, either have the leading section halt and the second section close up after the leading section has halted or have the leading section take up the half step until the rear section has closed up.

PLATE 179.

132. Being in line of sections, to form column of squads to a flank, the command is: 1. *Sections, column right*, 2. MARCH.

This is a simultaneous movement because both sections execute it at the same time. This is indicated by the 1st command "sections, column right." At this

command each section leader commands "column right." At the command MARCH, given by the platoon leader, section leaders and guides resume their original positions as follows: The section leaders become the platoon guides and the section guides get into the file closers.

We wish to again caution the student to get clearly in mind the formation the platoon is in, namely, "line of sections" and the desired formation, namely, "column of squads to the flank," before he attempts to give the command.

133. *Facing or marching to the rear.* Being in line of sections, or column of squads to face or march to the rear, the command is: 1. *Squads right (left) about*, 2. MARCH, or 1. *Squads right (left) about*, 2. MARCH, 3. *Platoon*, 4. HALT.

Executed by each squad as described in the School of the Squad.

If the platoon or section be in column of squads, the file closers turn about toward or with the column and take their posts; if the platoon be in line, each darts through the nearest interval between squads.

134. To march to the rear for a few paces the command is: 1. *About*, 2. FACE, 3. *Forward*, 4. MARCH.

If in line the guides at the command "forward" place themselves in the rear rank, the file closers, on facing about, maintain their relative positions. No other movement is executed until the line is faced to the original front. If only moving to the rear a distance of three or four paces it is best to have this movement executed "at trail."

135. *At ease and route step.* The column of squads is the habitual column of route, but *route step* and *at ease* are applicable to any marching formation.

To march in route step the command is: 1. *Route step*, 2. MARCH.

The men carry their pieces at will, keeping the muzzles elevated; they are not required to preserve silence, nor to keep the step. The ranks cover and preserve their distance. If halted from route step the men stand *at rest*.

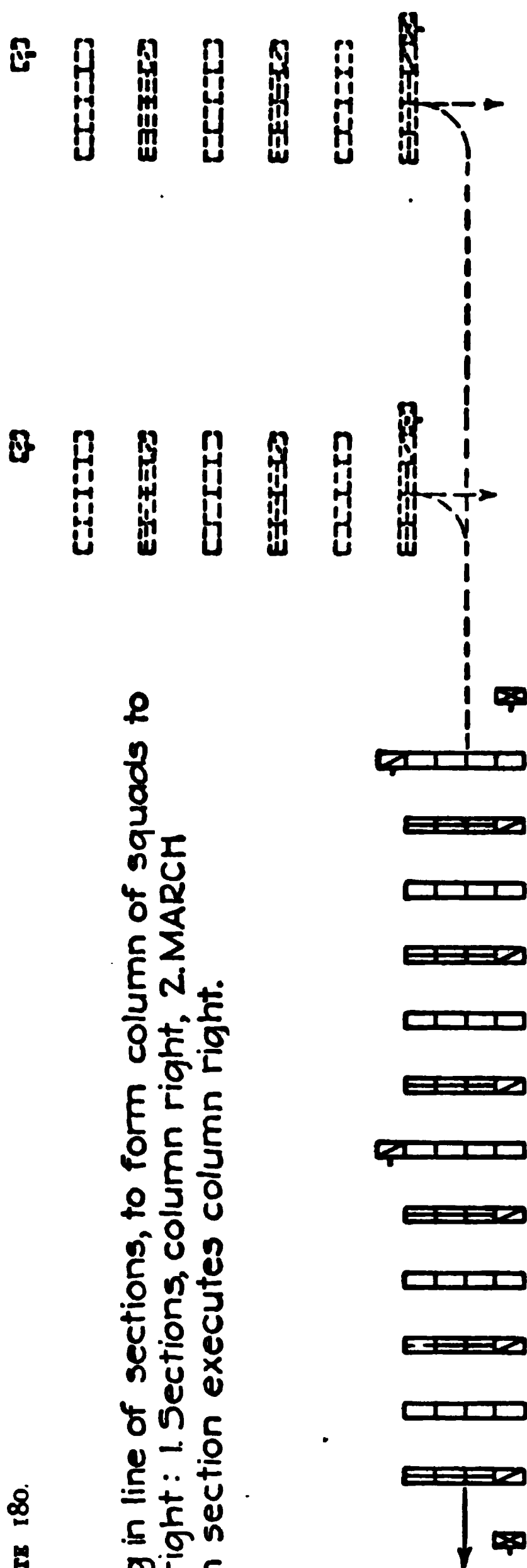
To march at ease the command is: 1. *At ease*, 2. MARCH.

The platoon marches as in route step, except that silence is preserved; when halted the men remain *at ease*.

Marching in route step or at ease the command is: 1. *Platoon*, 2. ATTENTION.

PLATE 180.

Being in line of sections, to form column of squads to the right: 1. Sections, column right, 2. MARCH. Each section executes column right.



At the command *attention*, the pieces are brought to the right shoulder and the cadence step in quick time is resumed.

136. *To diminish the front of a column of squads.* Being in column of squads the command is: 1. *Right (left) by twos*, 2. MARCH.

At the command MARCH, all files except the two right files of the leading squad execute in place halt (remain at right shoulder arms), the two left files of the leading squad oblique to the right when disengaged and follow the two right files at the shortest practicable distance. This oblique must be initiated as soon as possible; otherwise distance is lost. The remaining squads follow successively in like manner, the two right files stepping off in time to follow the two left files of the preceding squad at 40 inches.

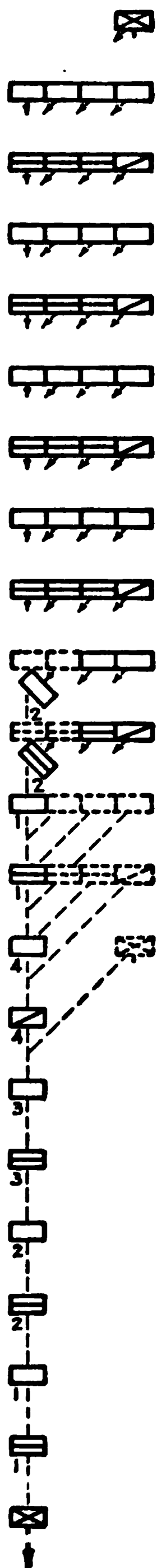
Caution. This movement (right or left by twos) is very difficult to execute without losing distance, and it is of very little disciplinary value.



Being in column of squads: 1. *Right by twos*, 2. MARCH. At the command MARCH all files except the two right files execute 1. in place, 2. HALT. The two left files of the leading squad oblique to the right when disengaged and follow the right files at the shortest practicable distance. The remaining squads follow successively in a like manner.

PLATE 181.

137. Being in column of squads or twos the command is: 1. *Right (left) by file*, 2. MARCH. We will explain it, first assuming the platoon to be in column of squads.



Being in column of squads: 1. Right by file, 2. MARCH. At the command MARCH all files execute 1. In place, 2. HALT. except the right file of the leading squad. The left files of the leading squad oblique successively to the right and each follows the file on its right at the shortest practicable distance. The remaining squads follow successively in like manner.

PLATE 182.

At the command MARCH; all files execute "In place HALT" except the right file of the leading squad which continues the march. The left files of the leading squads oblique successively to the right so as to follow one another at the shortest practicable distance. The remaining squads follow successively in like manner.

We will explain it now, assuming the platoon is in column of twos.

At the command MARCH, all files execute in place halt except the right file of the leading two. The left file of the leading two obliques to the right when disengaged and follows the right file at the shortest practicable distance. The remaining twos follow successively in like manner.

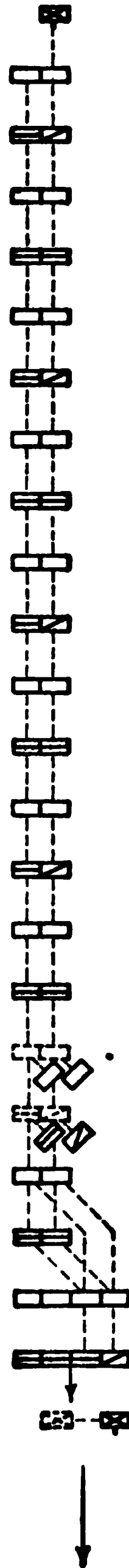
138. Being in column of files or twos, to form column of squads, or being in column of files to form column of twos, the command is: 1. *Squads (twos) left (right) front into line*, 2. MARCH.

At the command MARCH, the leading file or files halt. It is a common error for the two leading files to forget to halt at the command MARCH, or to halt and remain at right shoulder arms. The rest of the leading squad, or twos, obliques to the left, and halts on line with the leading file or files. The remaining squads or twos close up and successively form in rear of the first in like manner. It is a common error in executing this movement to close up too much.

The movement described in this paragraph will be ordered right or left so as to restore the files to their normal relative positions in the column of twos or in squads.

139. The movements prescribed in the three preceding paragraphs are difficult of execution at attention and have no value as disciplinary exercises.

Marching by twos or files cannot be executed without serious delay and waste of road space. Every reasonable precaution will be taken to obviate the necessity for these formations in route columns. They find their principal application as approach formations in the zone of hostile artillery fire, concerning which the student will receive instruction at the proper time.



Being in column of twos, to form column of squads:
1. *Squads left front into line*, 2. MARCH. At the command MARCH the leading files halt. (If armed with rifles, come to the order arms.) The remainder of the squad obliques to the left and halts on line with the leading files. The remaining squads close up and successively form in rear of first in a like manner.

PLATE 183.

Extended Order.

140. The purpose of extended order drill is to teach the mechanism of deployment, of the firings, and, in general, of the employment of troops in combat. Such drills are in the nature of disciplinary exercises and should be frequent, thorough, and exact in order to habituate men to the firm control of their leaders.

141. Extended order drill is executed at ease. The platoon is the largest unit which executes extended order drill. Many men get the idea that, as extended order drills are executed at ease, they can slouch and be inattentive. Such is entirely contrary to the spirit of the regulations.

It is recommended that the following rule about carrying the piece at extended order drill be prescribed:

"In all movements, where it is prescribed the men run or double time, the pieces shall be carried at a high port; at all other times the pieces shall be carried at a proper trail."

In the position of *high port* the piece is grasped in both hands, sling to the front, body crouched, right hand at small of stock, height of thigh, left hand grasping the piece directly below upper sling swivel. Sling not included in grasp. Piece held far enough from body, and not so rigid as to hinder the man in running.

This position facilitates running, and is in accordance with the methods taught for holding the piece in preparation for getting into the prone position on the firing line.

142. Before studying the extended order movements, the following definitions and arm signals should be learned:

Echelon: One of a series of elements formed one behind the other. Also a modification of a line formation in which the elements on one or both flanks are disposed to the rear of those on their right or left.

Echelonment: Act of retiring the flank element of a line.

ECHELON.

PLATE 184.

ARM SIGNALS: In making these signals, either arm may be used. Officers who receive signals on the firing line "repeat them back" at once to prevent misunderstanding. Arm signals should be used at extended order drill. The movement is initiated when the arm signal is understood, however, in order to have uniformity, drill-masters often direct that the movement will commence when the hand is dropped to the side.

Forward MARCH: By the right (left) flank, MARCH; To the rear, MARCH: Face and move in the direction of march; at the same time, extend the arm vertically to its full extent and lower it to the front (flank—rear) until horizontal.

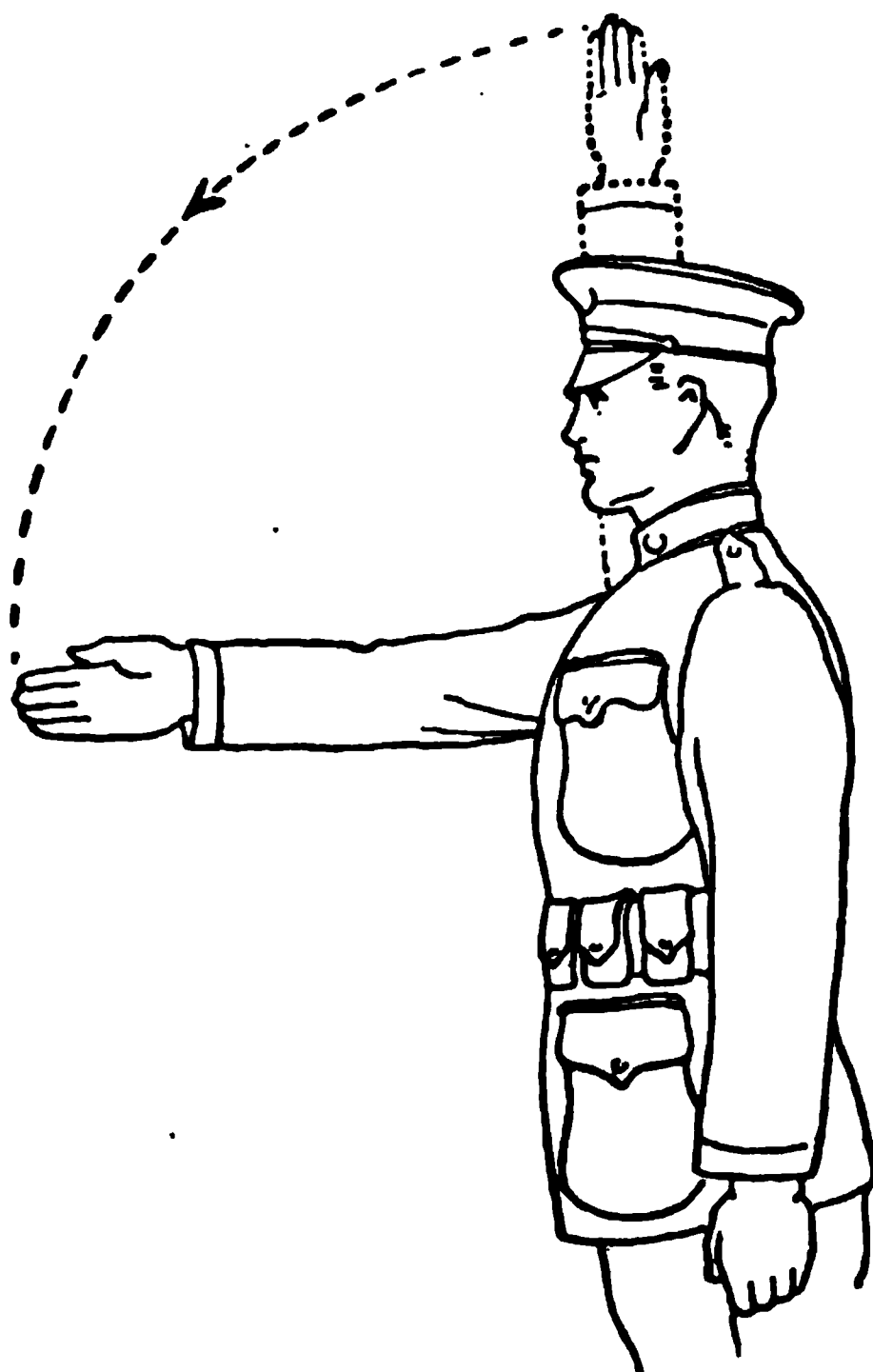
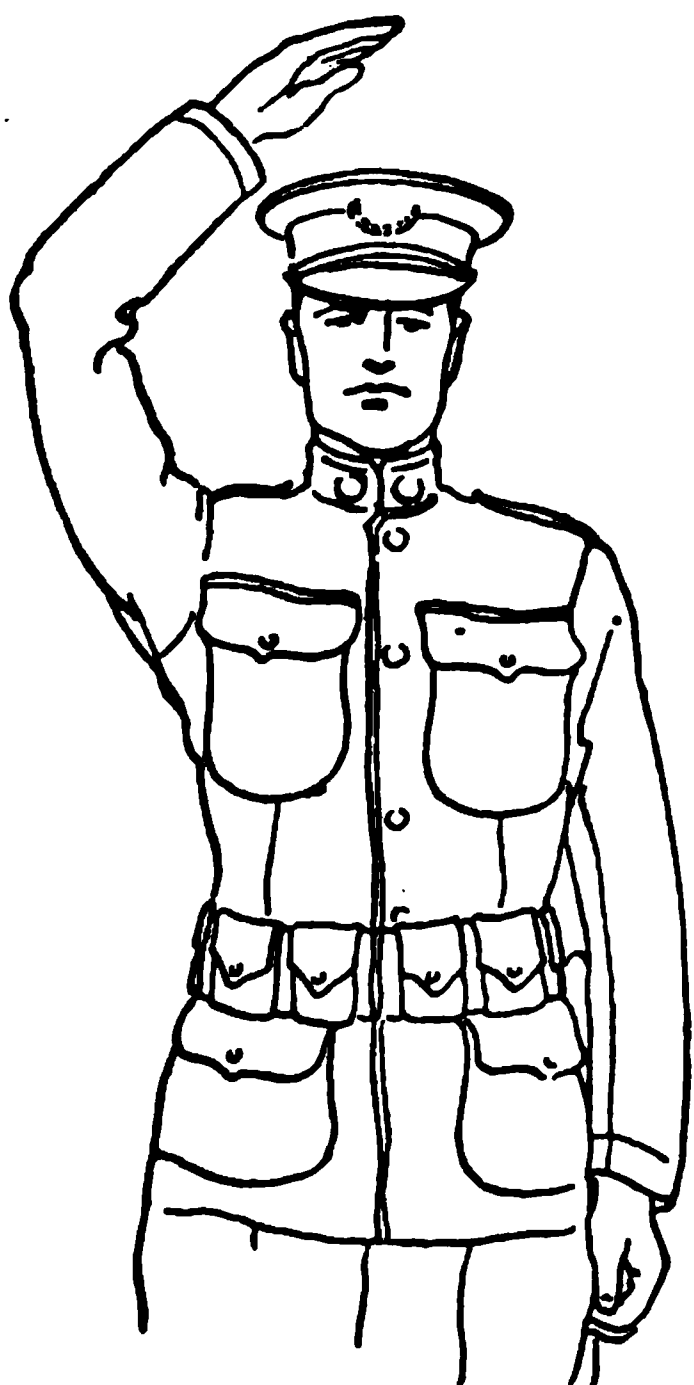
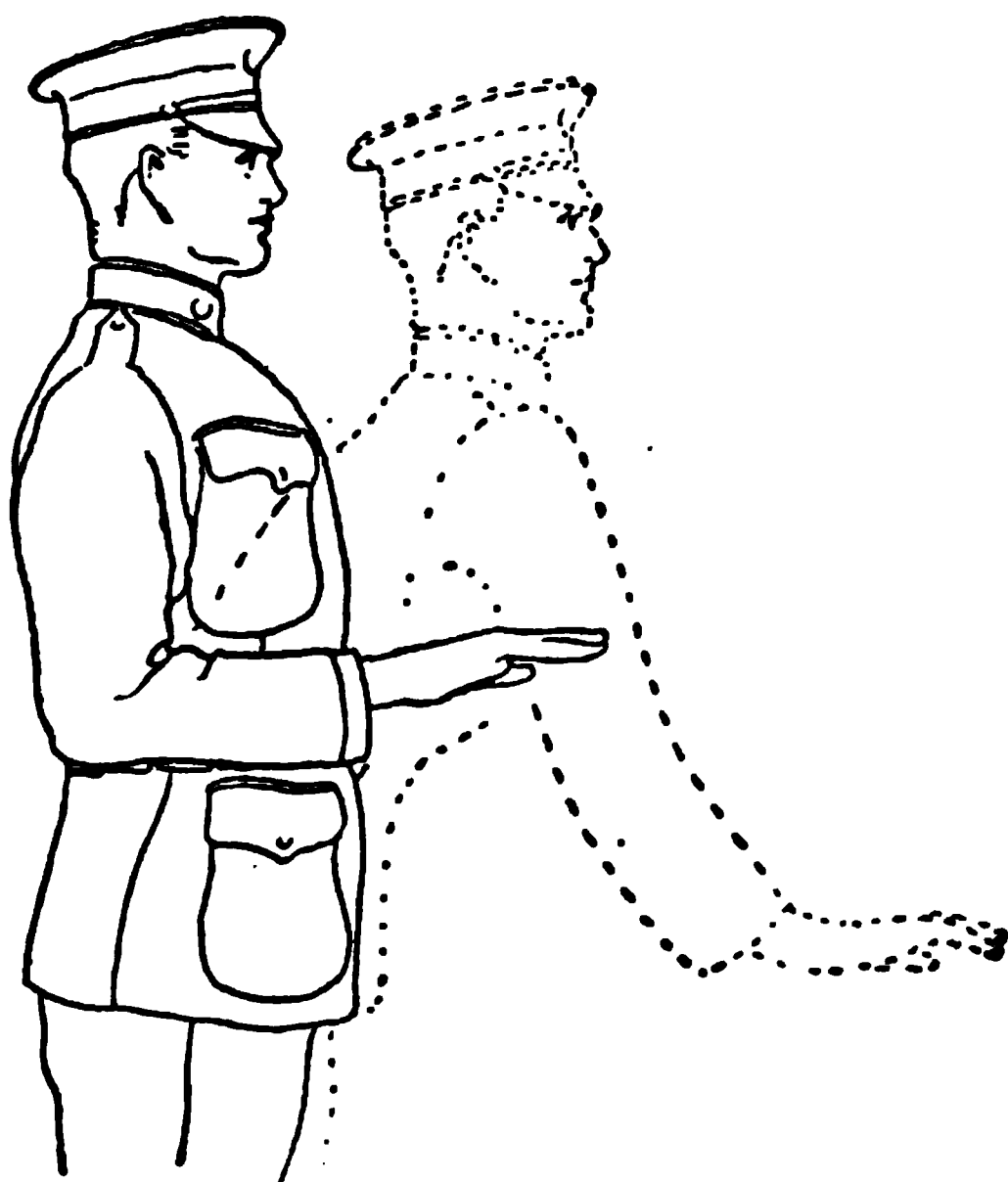


PLATE 185.—Forward, MARCH



Quick time, MARCH: Raise the right elbow to a position above and to the right of the right shoulder; extend the forearm to the left, right hand above the head.

PLATE 186.—Quick Time, MARCH.



Lie down (or take cover) : Turn toward the skirmishers and **raise** the hand in front of the elbow, forearm horizontal; thrust the hand downward several times, palm toward the ground.

PLATE 187.—LIE DOWN.

Double time, MARCH or RUSH: Carry the hand to the shoulder; rapidly thrust the hand upward the full extent of the arm several times.

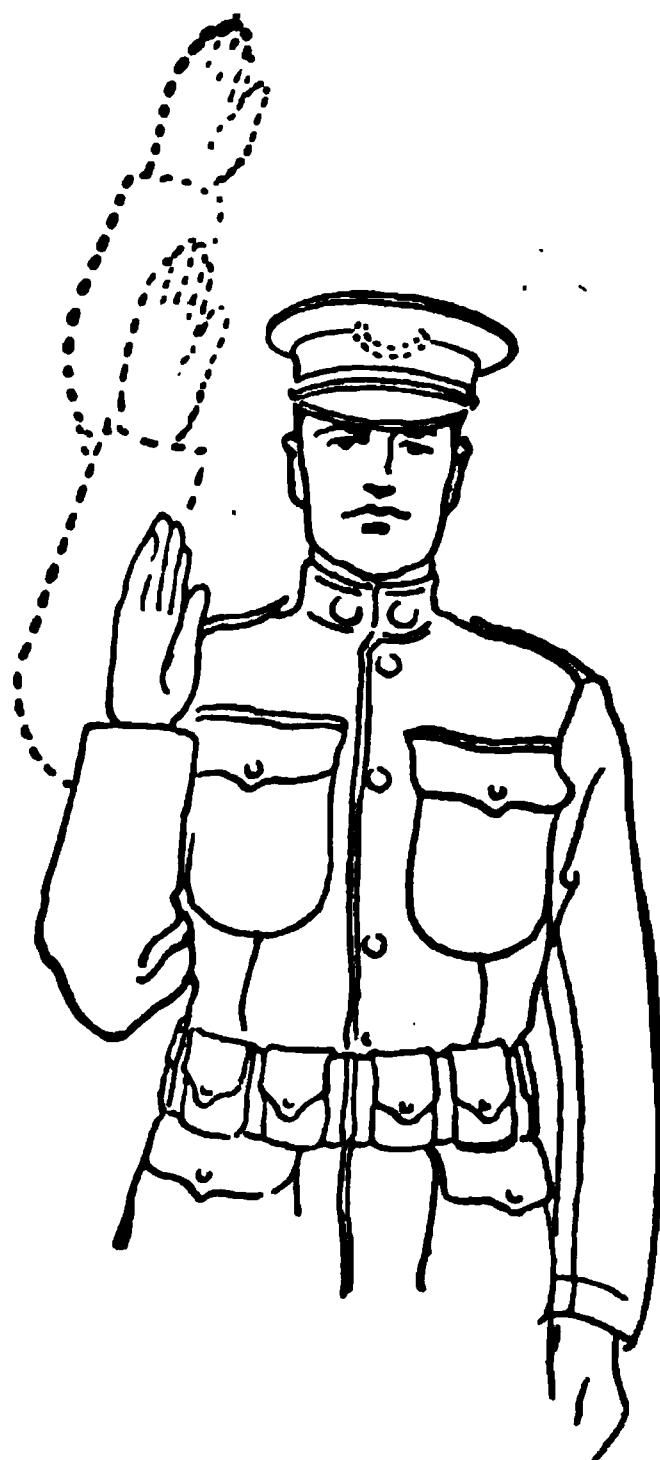


PLATE 188.—*Double Time, MARCH or RUSH.*

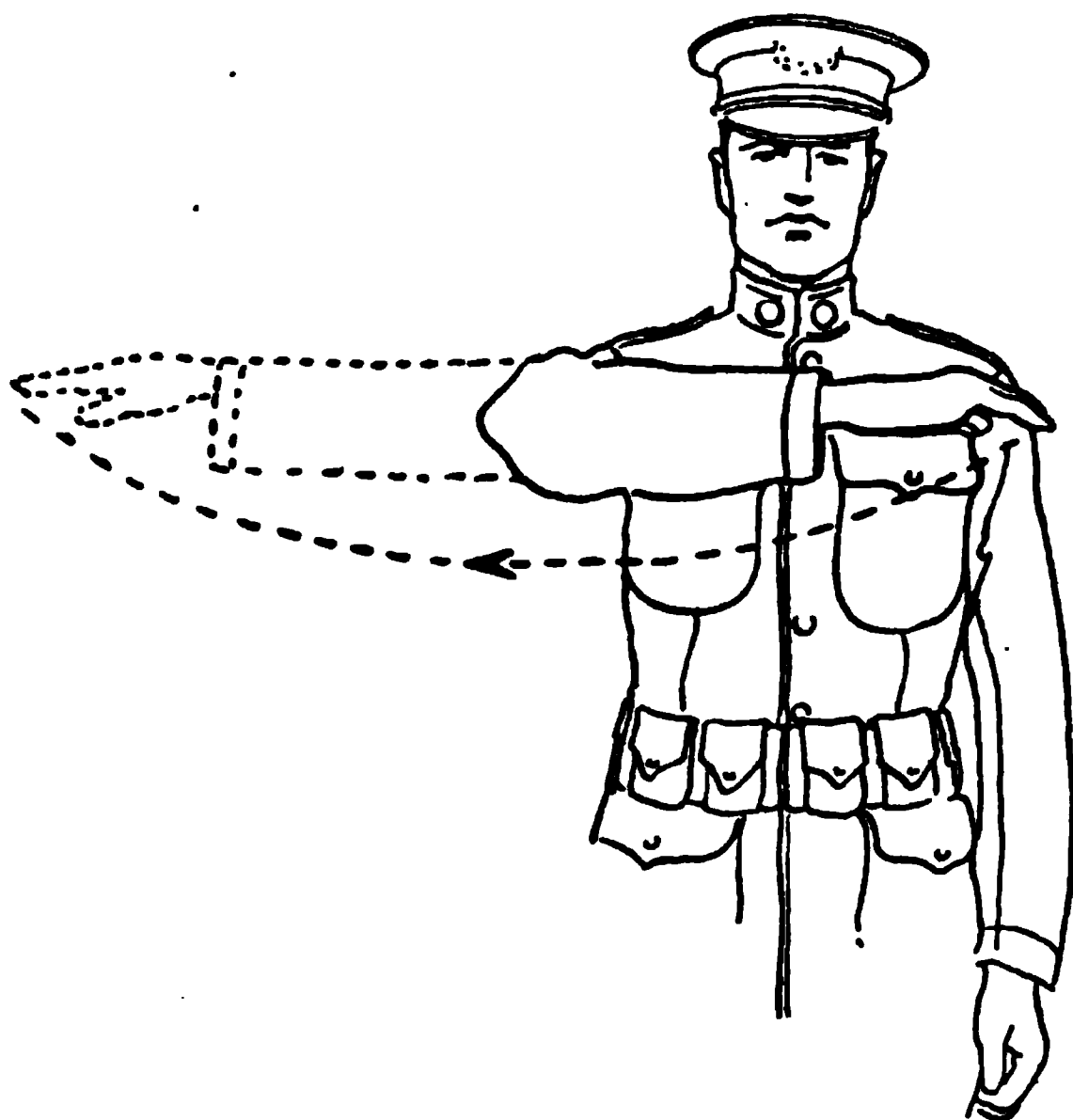


PLATE 189.—Change Direction.

Change direction: The hand on the side toward which the change of direction is to be made is carried across the body to the opposite shoulder, forearm horizontal; then swung in a horizontal plane, arm extended, pointing in the new direction.

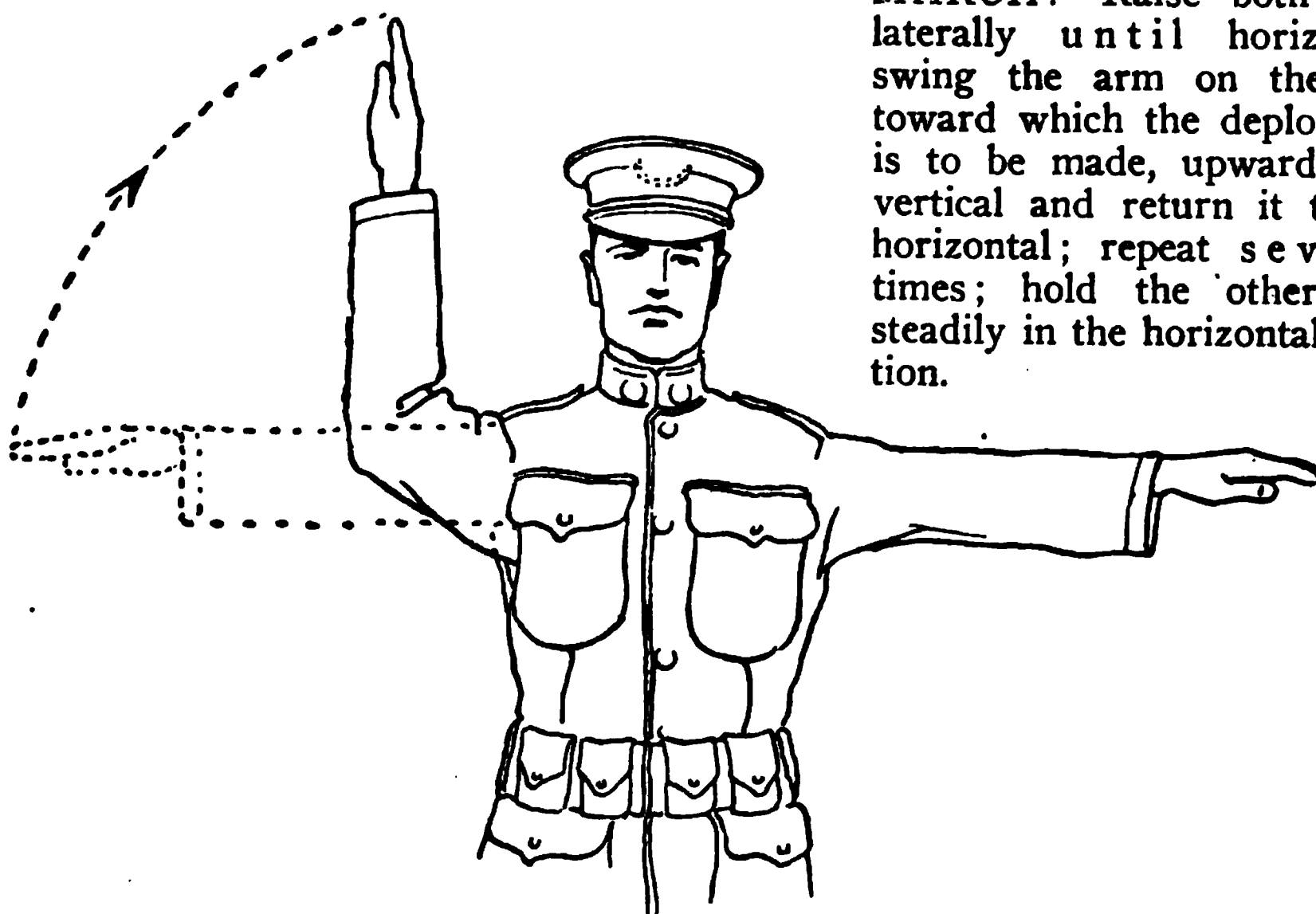


PLATE 190.—As Skirmishers Right, MARCH.

As skirmishers, right (left) MARCH: Raise both arms laterally until horizontal; swing the arm on the side toward which the deployment is to be made, upward until vertical and return it to the horizontal; repeat several times; hold the other arm steadily in the horizontal position.

Caution. Note that this signal as it is worded can be used when the instructor is either facing his men or facing in the same direction with them. In giving the above signal for skirmishers, do not think about your left or right arms but about the direction in which you wish the rear squads to move, and with the arm on that side of your body, irrespective of the direction you are facing, indicate as described above, the direction you want these rear squads to move and at the same time hold the opposite arm horizontal and still to indicate that end of the line (the leading squad) will be the base.

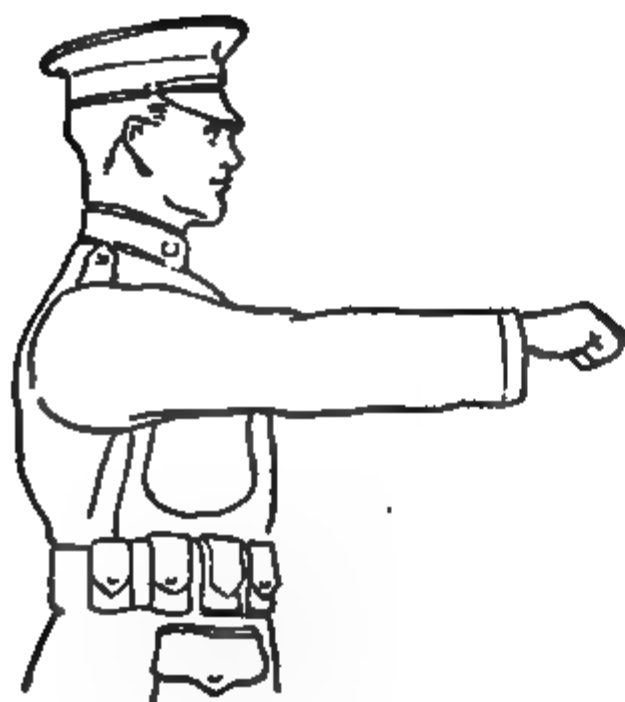


PLATE 191.—Range.

Range or change elevation: To announce range, extend the arm toward the leaders or men for whom the signal is intended, fist closed; by keeping the fist closed battle sight is indicated; open the fist once for 500 yards, twice for 1000 yards, etc., and thrust the fist upward once for each additional 100 yards; to add 50 yards describe a short horizontal line with the forefinger. To change elevation, indicate the complete new range.

Are you ready? or, I am ready: Raise the hand, fingers extended and joined, palm toward the person addressed.



PLATE 192.—Are You Ready?

Commence firing: Move the arm extended in full length, hand palm down, several times, through a horizontal arc in front of the body.

Fire faster: Execute rapidly the signal commence firing.

Fire slower: Execute slowly the signal commence firing.

PLATE 193.—Commence Firing.

To indicate a new target: Extend the arm its full length, to the front, palm to the right (left): Swing the arm to right (left), and point in the direction of the new target.

Fix bayonet: Simulate the movement of the right hand in fix bayonet.

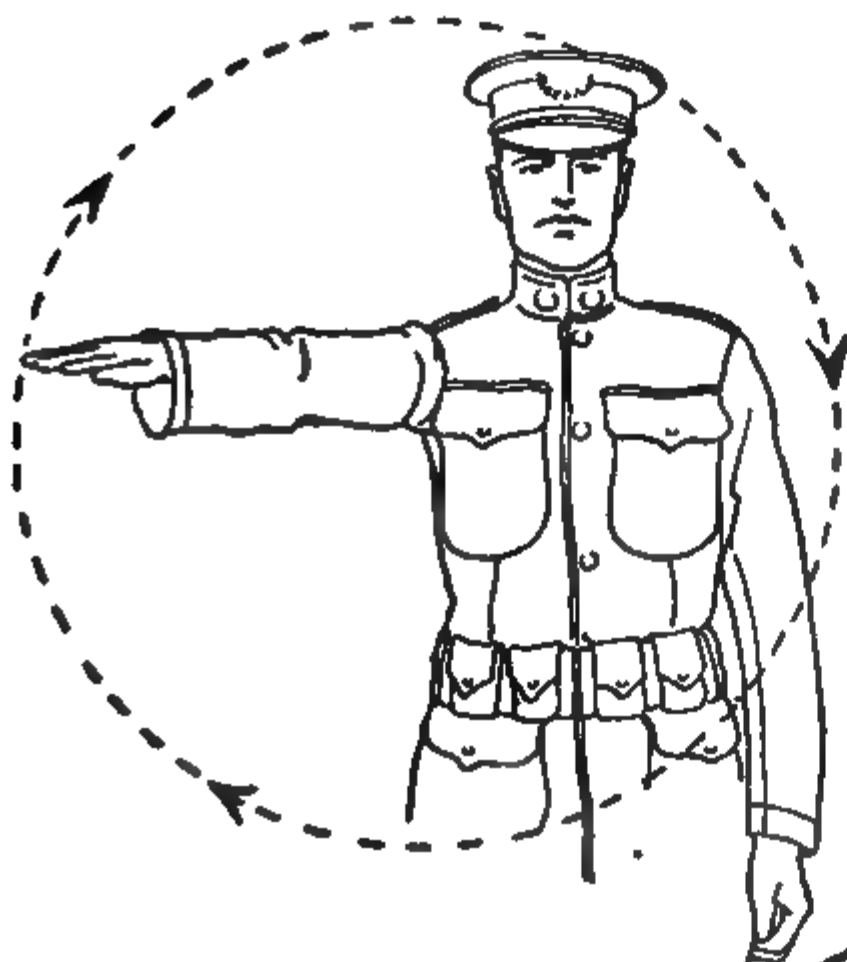


PLATE I

Section: Extend the arm horizontally toward the section leader; describe large circles with the entire arm.

PLATE 195. -Section.

Squad: Extend the arm horizontally toward the section leader; swing the hand up and down from the wrist.

The signals, *section* and *squad*, are intended primarily for communication between the platoon leader and his section leaders. The signal *section* or *squad* indicates that the section leader is to cause the signal which follows to be executed by section or squads.

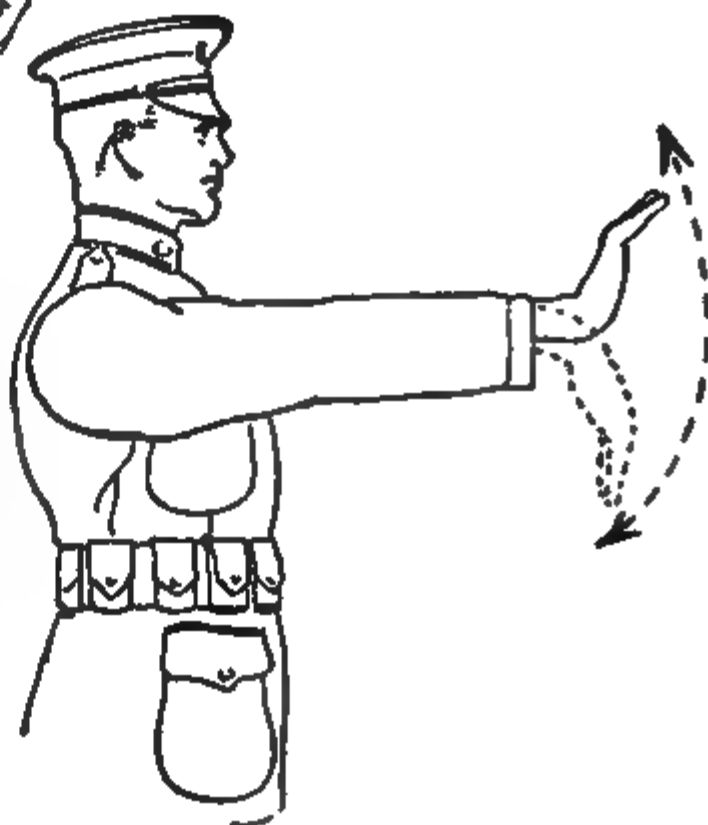
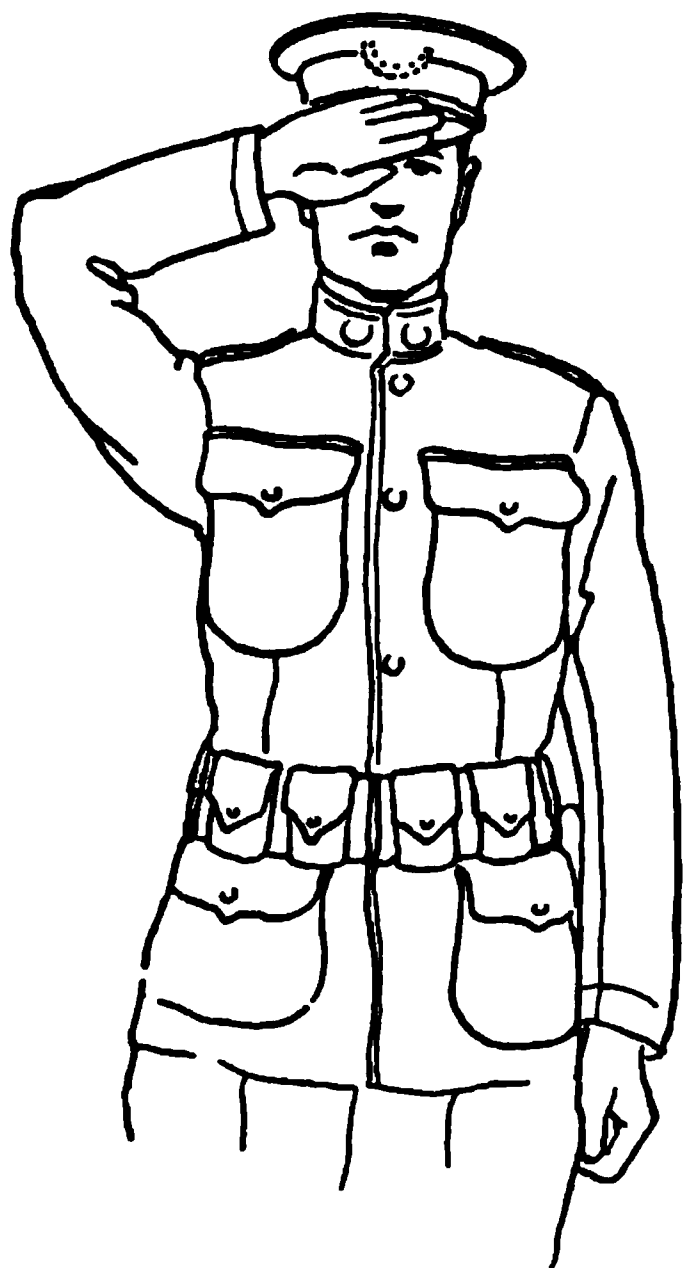


PLATE 196. -Squad.



Suspend firing: Raise and hold the forearm steadily in a horizontal position in front of the forehead, palm of the hand to the front.

PLATE 197.—Suspend Firing.

Cease firing: Raise the forearm as in *suspend firing* and swing it up and down several times in front of the face.

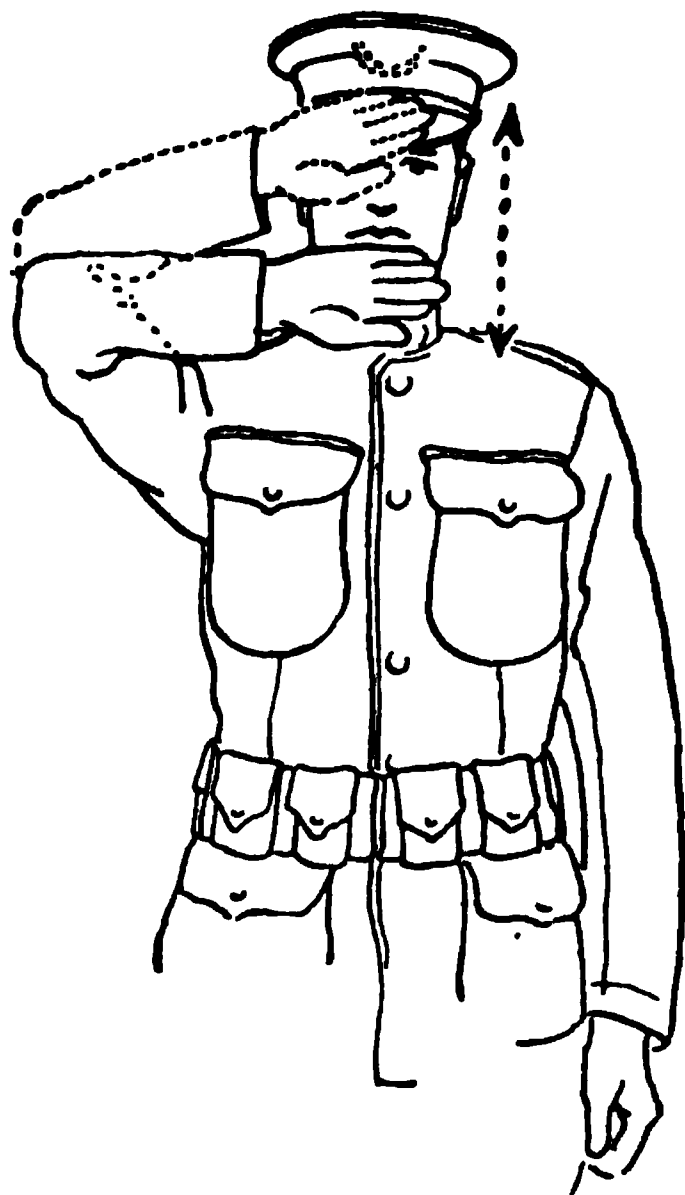


PLATE 198.—Cease Firing.

Rules for Deployments.

143. The following rules govern the deployment of the platoon:

a. All deployments are executed from column of squads, twos, or files, or from section or squad columns. Notice that you cannot deploy a platoon that is in line. The inexperienced drill-master often forgets that a deployment can be ordered from a column of twos or files. (See page 211, par. 156, Section Columns.)

b. The platoon must be so instructed that it is able to deploy in any direction, in silence, and in order. We wish to emphasize the word *silence* in this rule. It is always necessary to give a lot of orders and make a lot of corrections with untrained troops, but with trained troops this should not be necessary.

c. The direction may be designated prior to deployment, at the same time as the command for deployment or after completion of the deployment. The direction may be indicated by designating a prominent point of the terrain (*e. g.*, windmill, building, line of trees) or by signal. If the deployment is to be made in a direction varying greatly from the direction of the advance, the platoon must change direction before deploying. If no direction be designated, the platoon deploys straight to the front. Where an advance is to take place on assigned direction lines for long-continued periods, a distant direction point and compass bearing are designated after deployment. Student officers (platoon leaders) often forget during tactical exercises and field problems to indicate to the base squad the direction of march. This is a serious error.

d. The leading squad before deployment, is the base of deployment. It remains the base of the movement after deployment, unless another squad is designated by the platoon leader.

e. Deployed platoons preserve a general alignment toward, and maintain interval from the base squad within their respective fronts; individuals or squads march so as best to secure cover or facilitate the advance.

f. Except in case of darkness or heavy fog, platoon and section leaders deploy, assemble, and maneuver their units as far as practicable by arm signals.

Whistle signals must be sparingly used. When employed preliminary to a command during the advance into action, they give warning to the enemy of our approach, and when used to initiate a rush in the presence of the enemy, they betray to him the fact that a movement is about to commence. In general, their use should be limited to moments during the fire fight when on account of the noise of battle, it is impossible to attract the attention of the skirmishers by other means. The habitual use of the whistle as a preliminary to a command is prohibited.

g. A deployed platoon or section advances, halts, moves by the flank or to the rear, obliques, resumes the direct march, passes from quick to double time and the reverse by the same commands and in a similar manner as in close order; if at a halt, the movement by the flank or to the rear is executed by the same commands as when marching. Changes in the direction of march are usually effected by the assignment of a new march direction to the base squad; skirmishers place themselves on the new front by gradual obliques and by opening out from, or closing in on, the base.

A movement may be interrupted by the commands HALT, LIE DOWN, or RANGE. On halting, a deployed line faces to the front (direction of the enemy) in all cases. If halted, by the command LIE DOWN, skirmishers take cover; if halted by the command RANGE (or battlesight), they occupy the position on the approximate line with the platoon leader and place themselves in instant readiness for firing.

h. The following rules prescribing the position of certain members of the deployed platoon are most important:

At the command for deployment, runners join the platoon leader; when the platoon deploys as an element in the combat formation of the company, one runner joints the captain.

When the platoon is in movement, the platoon leader is always on the side of the platoon toward the enemy, so he can see what is going on in that direction. When the platoon is halted in a firing position he is either in the skirmish line or in the rear of it.

When otherwise halted, he remains in front of his platoon. He is not bound to a fixed post in front of his platoon, but must not move so far to the front as to lose control over it.

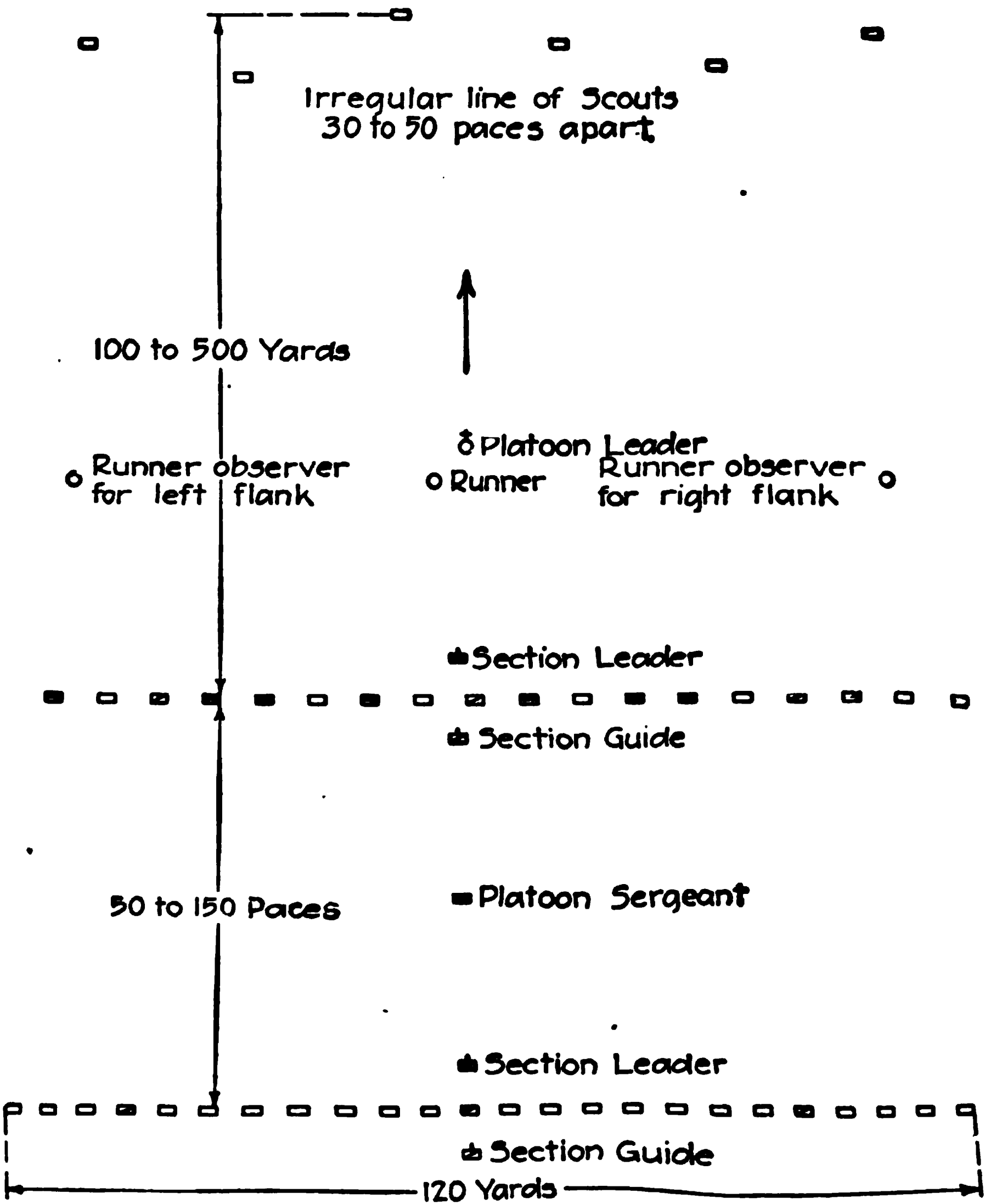
The post of the platoon sergeant is in rear of the center of the leading wave.

During forward or flank movements, section leaders are on the side of the section toward the enemy. During movements to the rear, they are on the side opposite to the enemy. When their sections are halted in a firing position, they are either in the skirmish line or in rear of it. When otherwise halted, they are in front of their sections. (See Plates 199 and 200.)

Section guides are always on the side of the section opposite to the enemy, generally near the center of their sections. They keep the column closed up and prevent straggling when the sections are deployed.

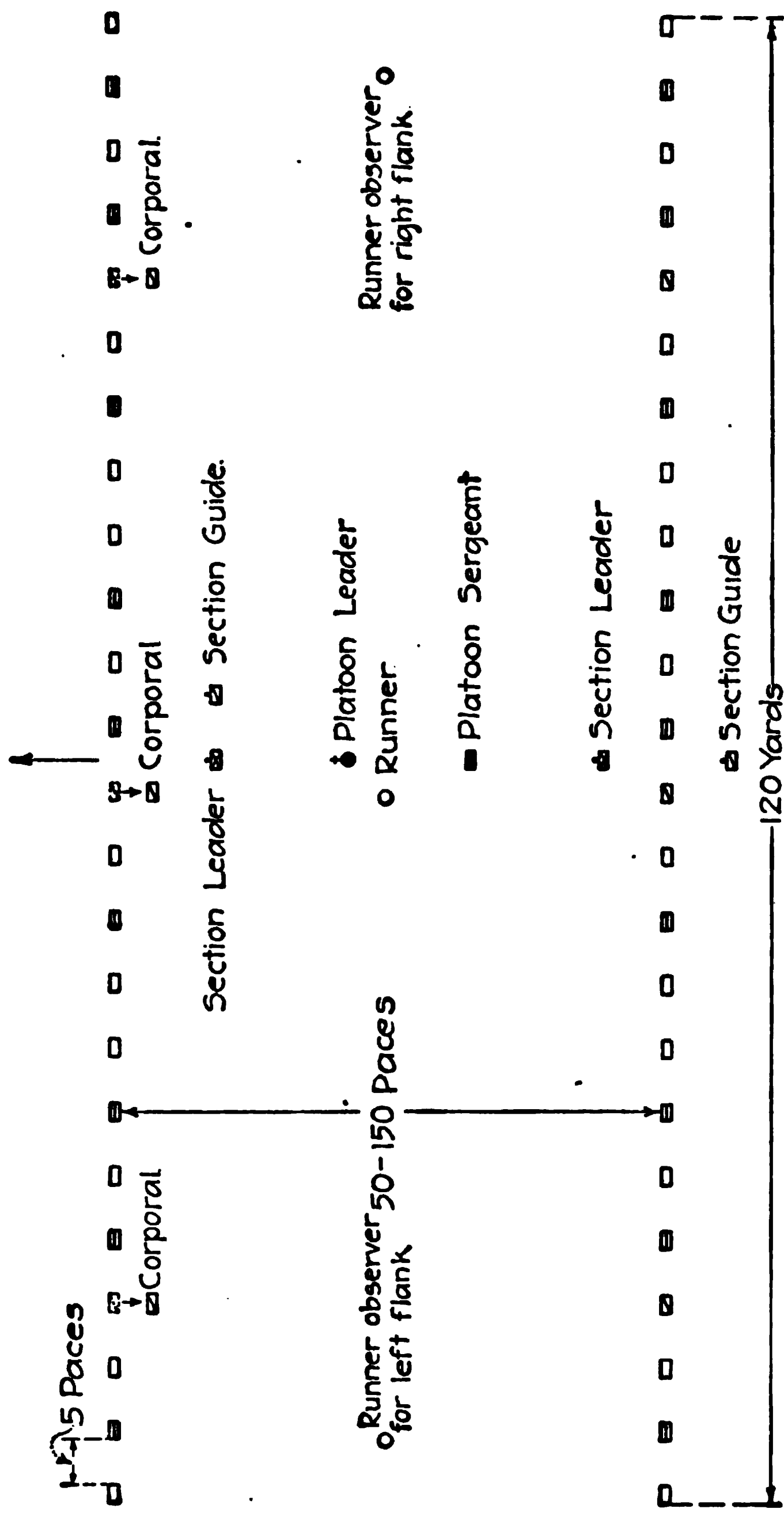
i. In each squad, two selected men are especially trained as scouts; of these, one man is permanently designated as scout. Scouts move out in front of their sections and cover the advance when so directed by the platoon leader; when necessary, they may be reinforced by the alternate scout of one or more squads. When scouts are sent out to a considerable distance (300-500 yards) in front of the platoon, they should operate as a patrol deployed at wide intervals, under a designated leader.

j. The assembly formation is always column of squads unless otherwise directed by the platoon leader.



Position of the leaders when the platoon is deployed as skirmishers and is advancing.

PLATE 199.—The Platoon Deployed and in Movement.



Position of the leaders when the platoon is deployed as skirmishers and halted for firing. Note: One of the runners has joined the captain.

PLATE 200.—Platoon Halted in Firing Position.

Extended Order.

Deployments.

144. Learn well this first deployment and the others will be easy to understand. The controlling idea is—the platoons open out into two deployed lines, each man running individually to his position. In a word, the formation changes in a minimum length of time.

In deployments all corporals and section leaders caution “as skirmishers” and give signals, the platoon leader waiting until he is sure every squad leader understands the desired movement before initiating it.

The men are trained to get their proper interval while they are running out behind the actual line (like an end run, which moves parallel to the line and then cuts in), this, to avoid walking around after they get on the line.

145. Being in column of squads, twos, files, squad or section columns, to deploy as skirmishers, the command is: 1. *As skirmishers*, 2. MARCH. Notice that the deployment can be made from the following formations: Column of squads, twos, files, squad or section columns. We will explain it for “As Skirmishers” from column of squads.

At the first command “As Skirmishers” the corporal of the leading squad of the leading section should caution and give the signal “As Skirmishers.” At the command MARCH, he, whether marching or at a halt, moves in quick time straight to the front or in the direction indicated by the platoon leader, the leading squad deploying abreast of him, the men moving at a run. The center and rear squads of the leading section deploy abreast of the leading squad, the center squad on the right, the rear squad on the left, the men running individually to their places on the line as soon as disengaged from the column. For all practical purposes each of these squads simply breaks ranks and reforms in a skirmish line in the proper places. Each corporal cautions and signals “As Skirmishers” at the first command and at the command MARCH runs individually (not leading his men) to his place in the line. If the leading section consists of only two squads, the rear squad deploys on the right of the leading squad.

The rear section deploys abreast of its leading squad and parallel to the line of the leading section as described for that section. The leading squad of the rear section deploys in place if halted, and if marching it deploys and halts. At the first command “As Skirmishers” the corporal of the leading squad of the rear section cautions and signals “As Skirmishers” and at the command MARCH he moves straight to the front about three paces, the squad deploying on him and halts. The corporal is responsible that this squad does not continue the advance. The center and rear squads of the rear section deploy abreast of its leading squad and halt, the center squad on the right and the rear squad on the left; the men running individually to their places in the line as soon as disengaged from the column. Unless otherwise directed by the platoon leader, the leading section gains a distance of 50 paces from the second section, which stands fast until it has this distance and then follows the leading section. The section leader of the rear section is responsible that this section gets a distance of 50 paces from the leading section. If the leading section is halted before it has a distance of 50 paces from the second section, the latter after it has deployed, is marched to the rear by its leader until it has the correct distance when it is halted, the men facing to the front. The success of the movement as far as the second section is concerned will depend largely upon how quickly its leader takes charge and gives the necessary commands. In an advance the rear section should modify its distance from the first in accordance with the available cover.

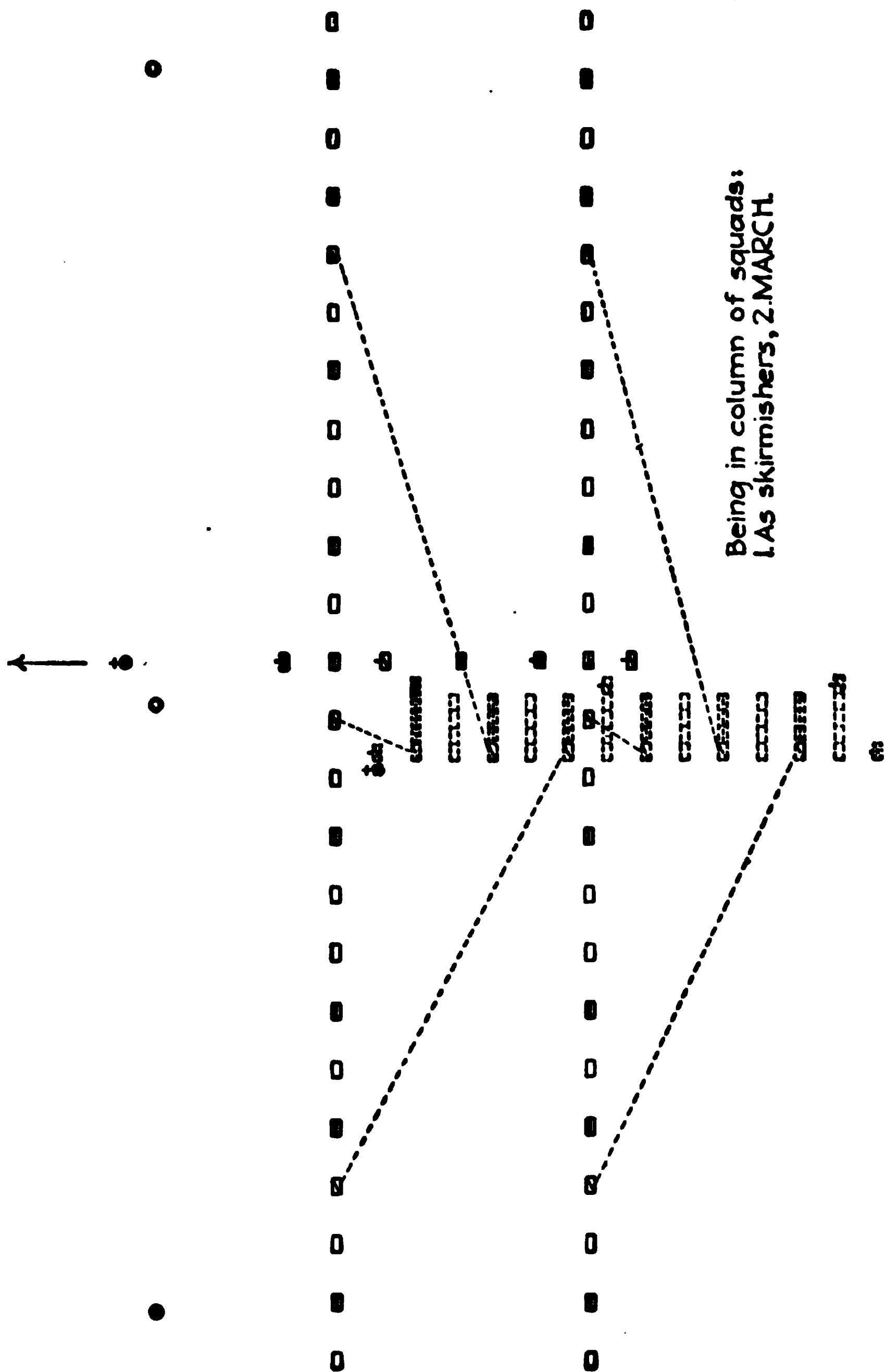


PLATE 201.

At the command MARCH, the platoon sergeant, section leaders, guides, and runners take their prescribed posts.

Scouts of the leading section move forward 150 yards (or to a specially designated distance), in front of their sections, when so directed by the platoon leader ("Scouts Out").

146. Being in column of twos, to deploy as skirmishers, the command is: 1. *As skirmishers*, 2. MARCH.

This movement is executed as described in paragraph 145, except that the second section does not have so long to wait or so far to march to the rear to get 50 paces from the first section.

147. Being in column of files, to deploy as skirmishers, the command is: 1. *As skirmishers*, 2. MARCH.

This movement is executed as explained in paragraph 145, except that the second section does not have so long to wait or so far to march to the rear to get a distance of 50 paces from the first section.

148. Squads may be deployed on one flank only of the leading squad of each section by the command: 1. *As skirmishers right (left)*, 2. MARCH. This movement is executed as described above except that in each section, the squads in rear of the leading squad of each section deploy on the right and abreast of the leading squad of its section. The rear squad of each section deploys on the extreme right of its section.

149. *Caution.* Train your men to first execute the deployments described from column of squads, then from column of twos and finally from column of files. The idea is to get them well grounded in the execution of this first movement. Do not permit your men to get out of hand during extended order drill. To do so is a common error.

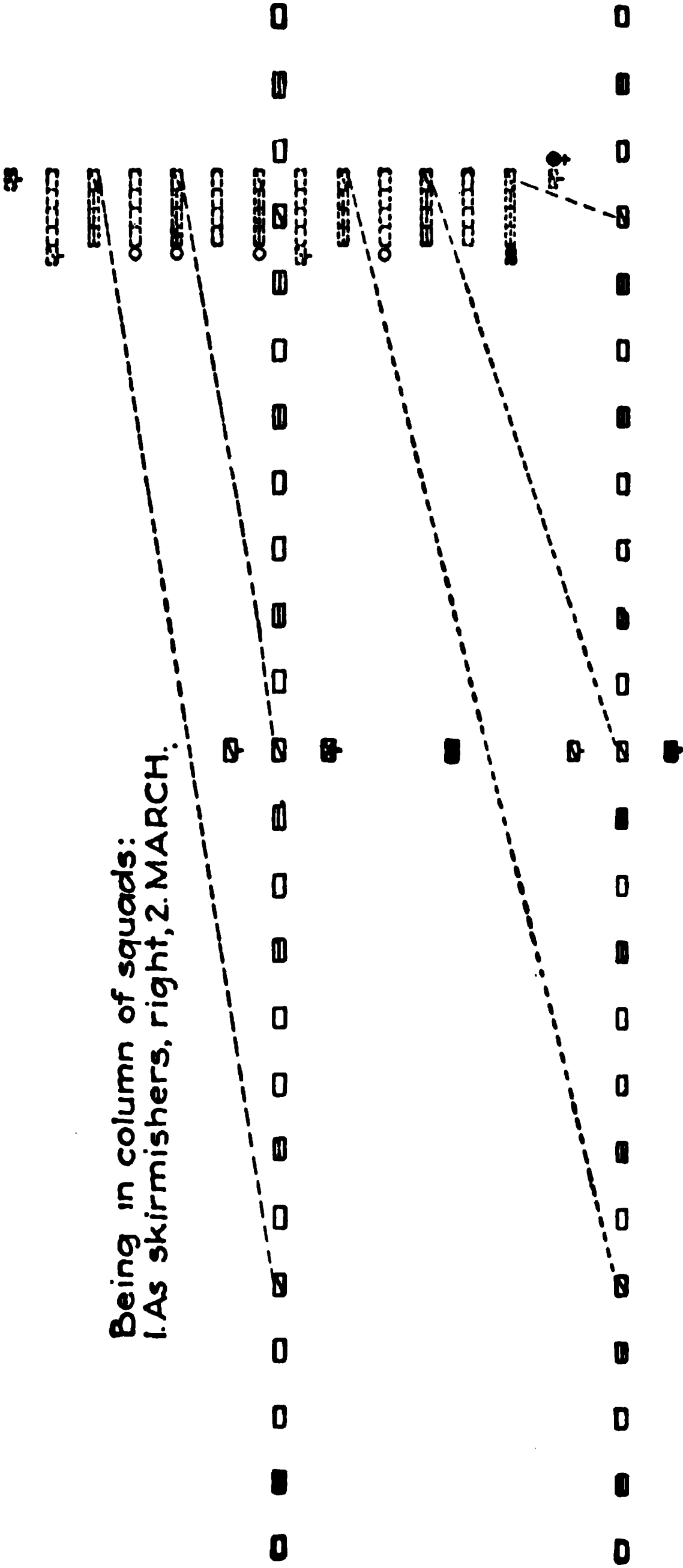
Insist on the repetition of signals, and that when a signal is transmitted by any individual it means he is responsible for his section or squad as the case may be. This rule gives the platoon leader a chance to place responsibility for errors which is often very difficult to do.

150. One section only may be deployed by the command: 1. (*Such*) *Section*, 2. *As skirmishers (right, left)*, 3. MARCH.

Executed by the designated section as above described, for the leading section. The other section does not change its formation.

151. All the deployments described above can be executed from section columns. The second section, in case it is echeloned well to the rear, should not attempt to close up to 50 paces on the first section, until it (first section) halts. The rear section merely deploys and moves forward as though it were the leading section, keeping of course, in rear of the first section.

152. Corporals, during extended order drill, are expected to give the necessary commands and instructions to their men to insure a correct execution of each movement. However, when the men are well trained in extended order drill, no voice commands from anyone should be necessary. The drill should be controlled by means of arm signals and no corrections should be necessary. Remember, in battle the voice cannot be heard, and it is then too late to be making minor corrections.



Being in column of squads:
I. As skirmishers, right, 2. MARCH.

153. Being in column of squads, twos or files, to deploy in line of squad columns, the command is: 1. *Squad columns*, 2. MARCH, or 1. *Squad columns, right (left)*, 2. MARCH.

Being in column of squads, to form line of squad columns:
1. *Squad columns*, 2. MARCH.
(Note: The Platoon Leader and Runners move in advance of the platoon. The Platoon Sergeant remains half way between the sections in each formation.)

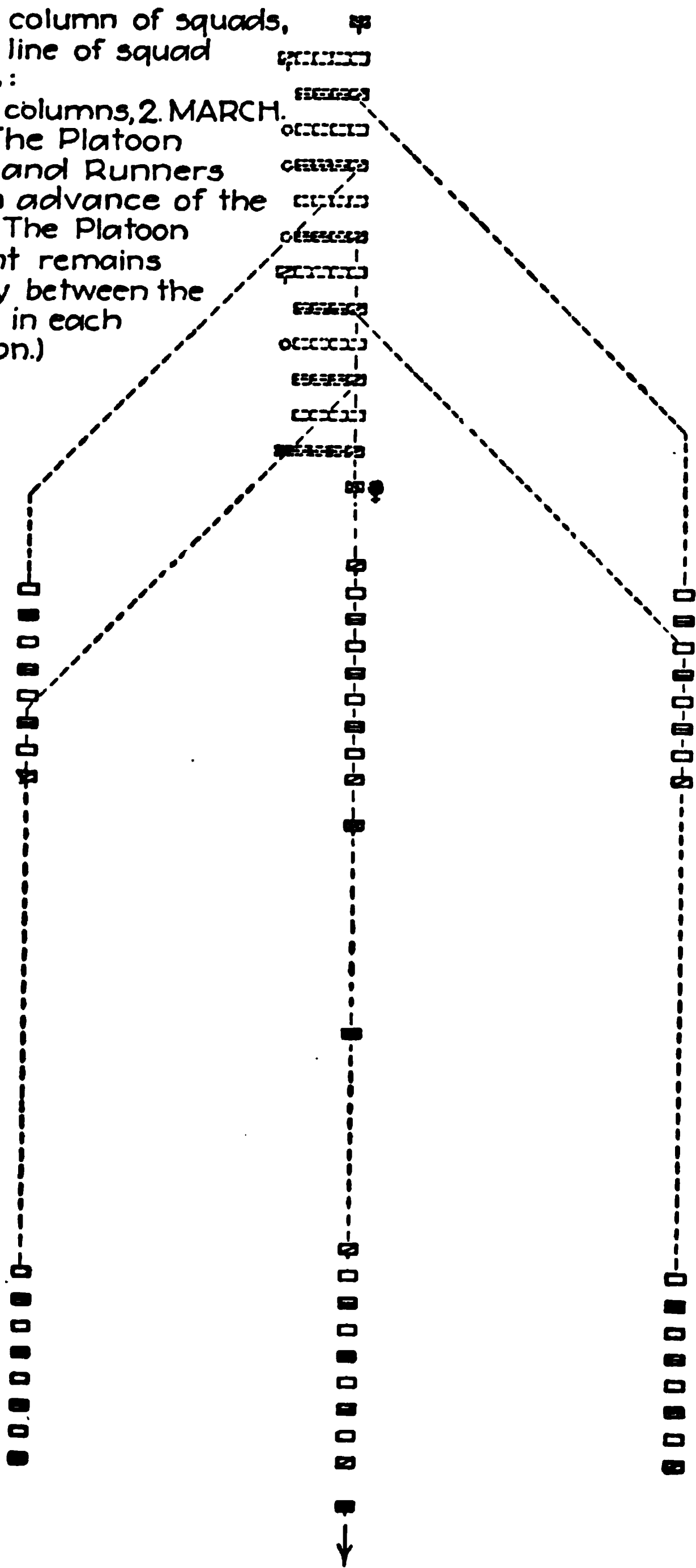


PLATE 203

At the command MARCH, the corporal of the leading section having at the first command cautioned "left by file," causes his squad to execute "left by file" and to move at quick time to the front or in the indicated direction. (Notice that the leading squad moves out irrespective of whether the movement is executed from a halt or while marching.)

At the command MARCH the second squad of the leading section gives way to the right executing "left by file," having been previously cautioned "left by file" by its squad leaders, the third or rear squad executes left by file from its position in the column. They are conducted at a *double time* (not a run) to their positions abreast of and 40 paces away from the leading squad; the center squad is on the right of, and the rear squad on the left of the leading squad. If the leading section consists of only two squads, the rear squad takes its place on the right of the leading squad. In order to execute this movement cleverly, it is necessary, for the corporals of the squads, that execute left by file, and change direction at the same time, to take up a very slow double time until their squads are in the new column formation, namely, "left by file." Notice that the distance between squad columns is 40 paces.

The corporal of the leading squad of the second section, causes his squad to execute, "left by file," as soon as the squad in front of his has moved out. As soon as the leading squad of the rear section is in "squad column formation," and facing in the same direction as the leading squad of the leading section, it is halted by its corporal. It is not contemplated that this squad will make any appreciable advance before it is halted. The center and rear squads of the rear section execute, "left by file," and are conducted at a double time to their positions to the right and left respectively of the leading squad of the rear section, and 40 paces from it, as explained for the leading section.

Unless otherwise directed by the platoon leader, the rear section gains a distance of approximately 50 paces from the leading section, by standing fast or by moving to the rear after deployment if necessary. If the platoon advances, the rear section follows the leading section, modifying its distance as required by considerations of cover.

The platoon sergeant, section leaders, and guides, and runners take their prescribed posts.

Scouts of the leading section move forward 150 yards (or to a specially designated line), in front of their sections, when so directed by the platoon leader ("scouts out").

Notice that in executing as skirmishers the men move to their new positions at a run, whereas in executing squad columns, each squad moves to its position at a double time.

154. Squads may be deployed on one flank of the leading squad of each section by the command: 1. *Squad columns, right (left)*, 2. MARCH. Executed as above described, except that in each section the rear squads move to their positions to the right (left) of and abreast of the leading squad of each section.

155. The formation "*line of squad columns*" may be combined with "*line of skirmishers*" by appropriate commands, for example: 1. *Second section, as skirmishers*, 2. *First section, squad columns*, 3. MARCH.

Each section executes the ordered movement as previously explained. The rear section follows the leading section at 50 paces which it gains, if necessary by marching to the rear as previously explained.

Distance between men in squad columns is such as will permit ease in marching, which is about 40 inches.

In combination movements it is best to give the signal or command to the second section first so that the men of this section will not get confused by the movement of the men of the first section.

Section Columns.

(One must get clearly in mind what a section column is to understand the following paragraph.)

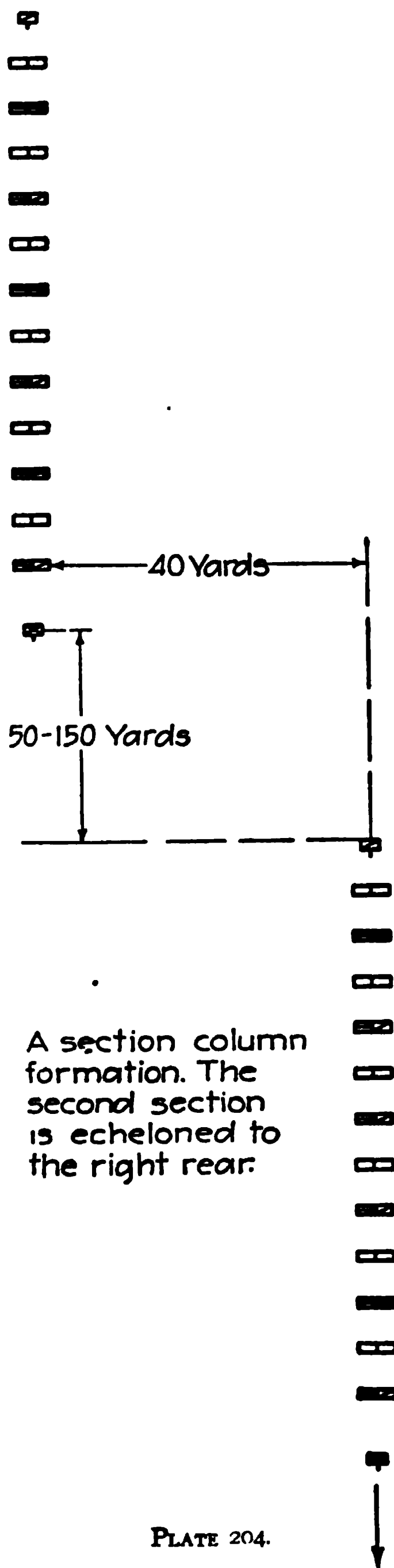
156. Section columns are sections in column of twos; the sections are disposed with reference to each other abreast, in column with distance between sections, in echelon, or other formation required by the terrain or available cover, as directed by the platoon leader.

157. When section or squad columns are formed in echelon or other irregular formation, they regulate their march on the most advanced unit.

This formation is used mostly during what is called the "Approach March," that is, when the infantry is crossing ground that may be swept by artillery and long range infantry fire, in its (infantry) advance or approach to the position where it must open fire on the opposing infantry, or machine guns.

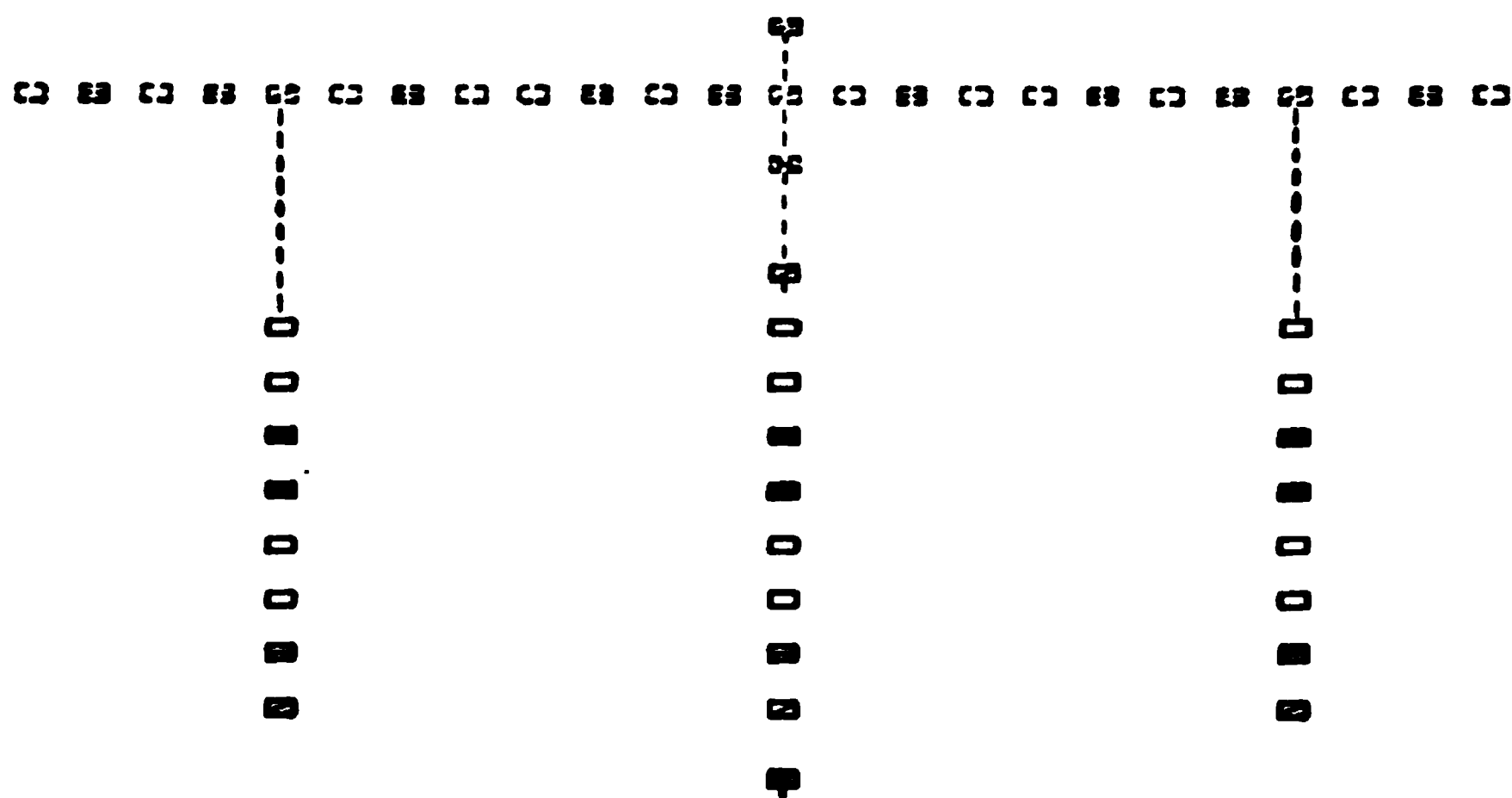
How to Form Section Columns.

158. Section columns may be formed from close-order formation by forming column of twos in accordance with the principles of close order and disposing the sections in such manner as the situation may require. For instance, the platoon leader could command: 1. *Left by twos*, 2. MARCH, and then direct the rear section to follow the first at 100 paces or to follow 100 paces to the rear and 50 paces to the right. If the sections are to be disposed abreast, the platoon should first be formed in line of sections, and then the platoon leader commands: 1. *Left by twos*, 2. MARCH. Easy marching distances between men in section columns are maintained. The forming of the platoon in section columns is very easy and has no disciplinary value. It is a battle formation. The above movement is executed by the command: 1. *Section columns*, 2. MARCH.



159. Being in skirmish line, to form line of squad columns, the command is:
1. *Squad columns*, 2. MARCH.

At the first command each squad leader should caution “squad column” and at the command MARCH move in quick time, to the front; the members of each squad oblique *at a run* toward their squad leader, and follow him in single file at easy marching distances. (About 40 inches.)



Being in skirmish line, to form line of squad columns:
1. *Squad columns*, 2. MARCH.



PLATE 205.

Notice that at the command MARCH each squad leader, whether marching or at a halt, moves to the front.

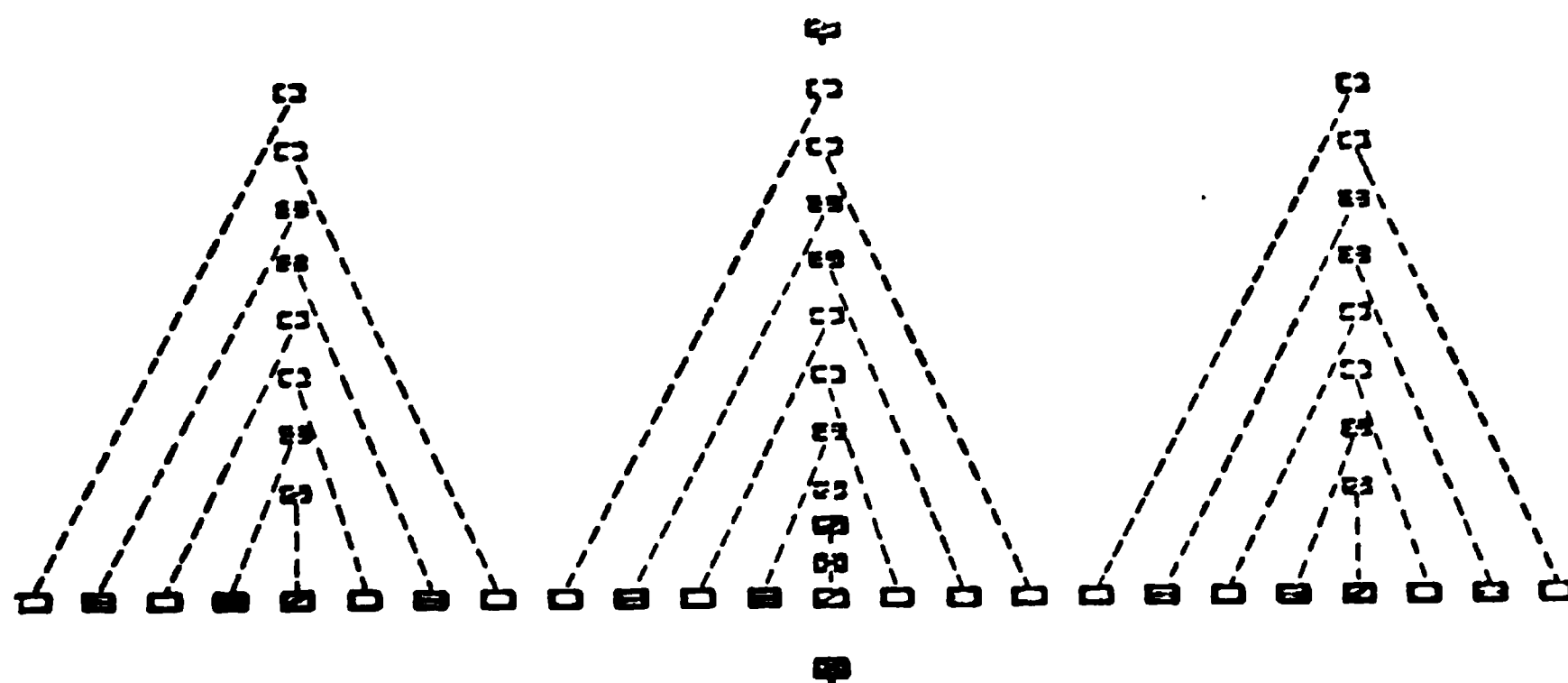
The squad does not take up a “left by file formation” but each man takes his place in the column when he reaches it.

160. Being in line of squad columns, to form line of skirmishers, the command is: 1. *As skirmishers*, 2. MARCH.

Each squad deploys, the skirmishers forming in the same relative order as in deployment from close-order formation.

The men go to their new positions at a run.

If the platoon is advancing it continues to advance and if halted it stands fast, the deployment being made on the corporals in either case.



Being in line of squad columns, to form line of skirmishers: 1. *As skirmishers*, 2. MARCH.

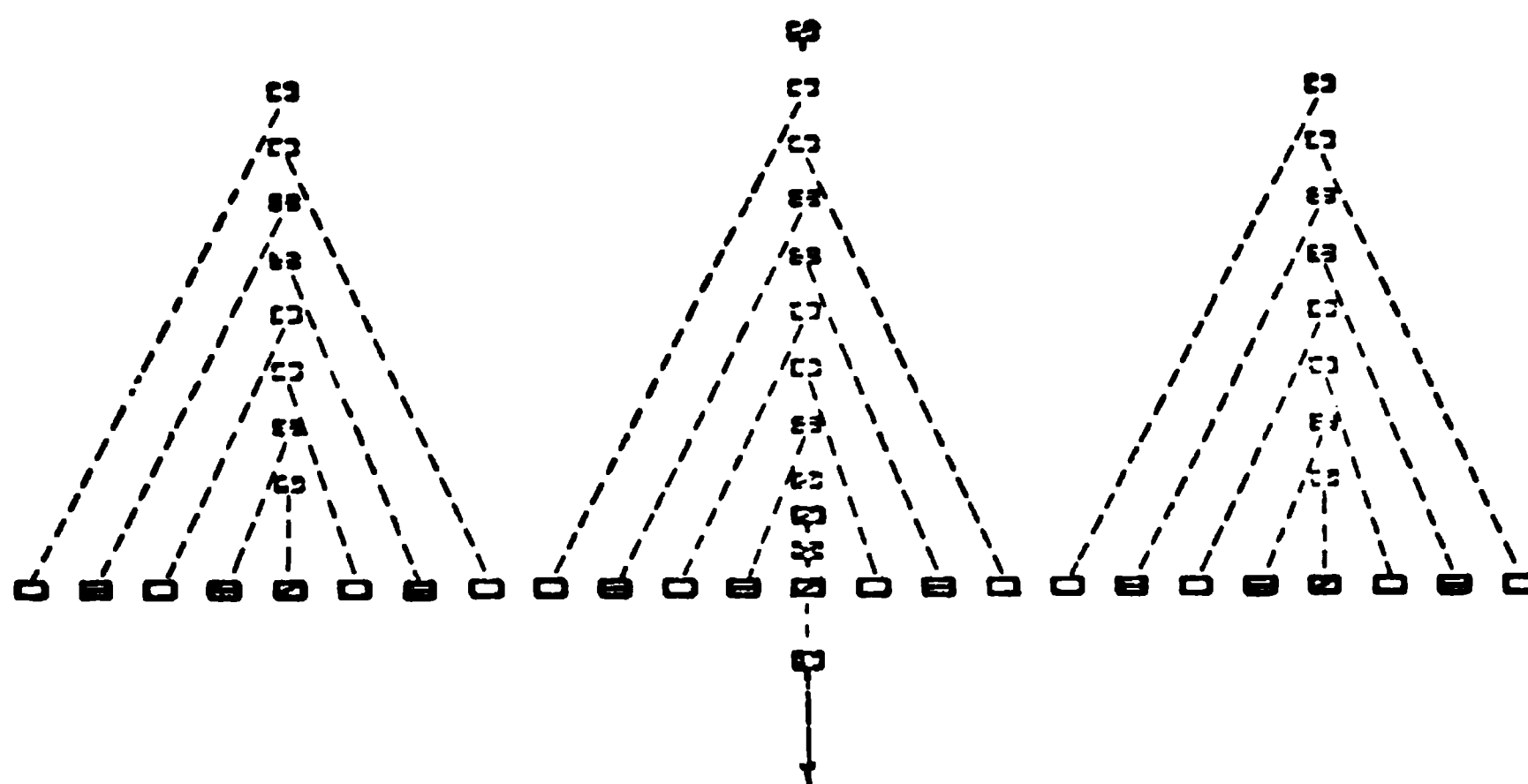


PLATE 206.

161. Being in line of skirmishers or squad columns, to form section columns, the command is: 1. *Section columns*, 2. MARCH.

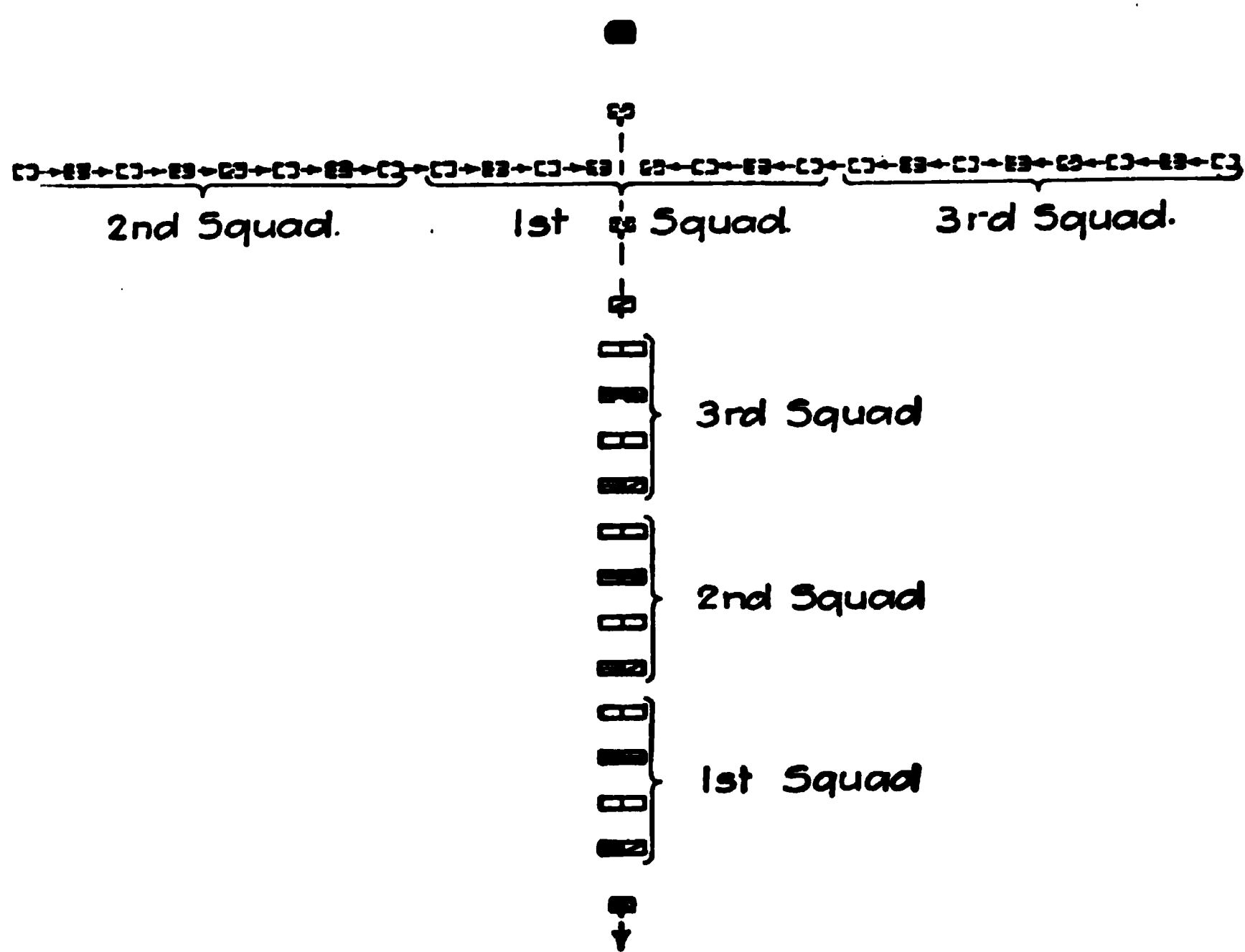
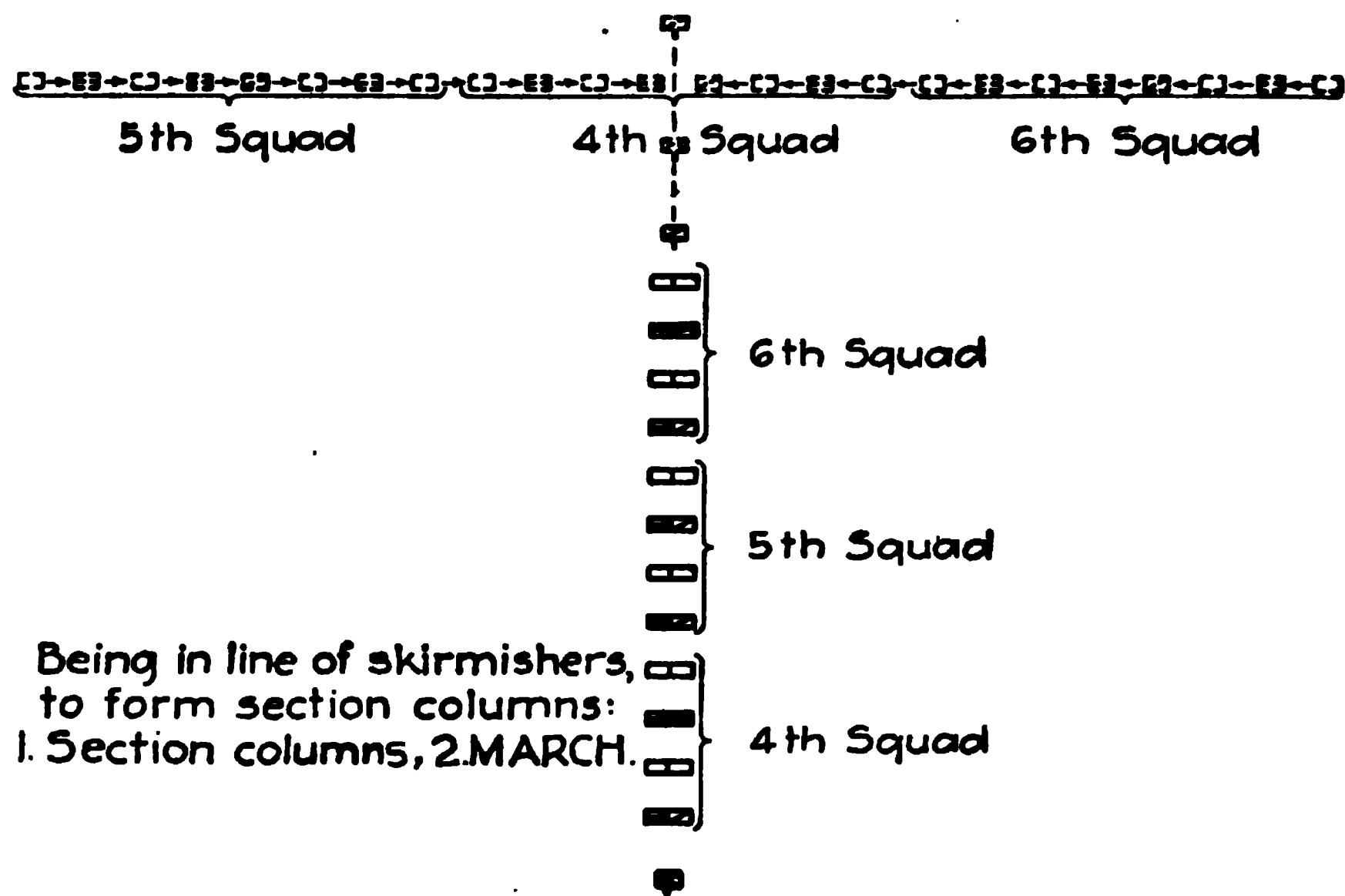


PLATE 207.

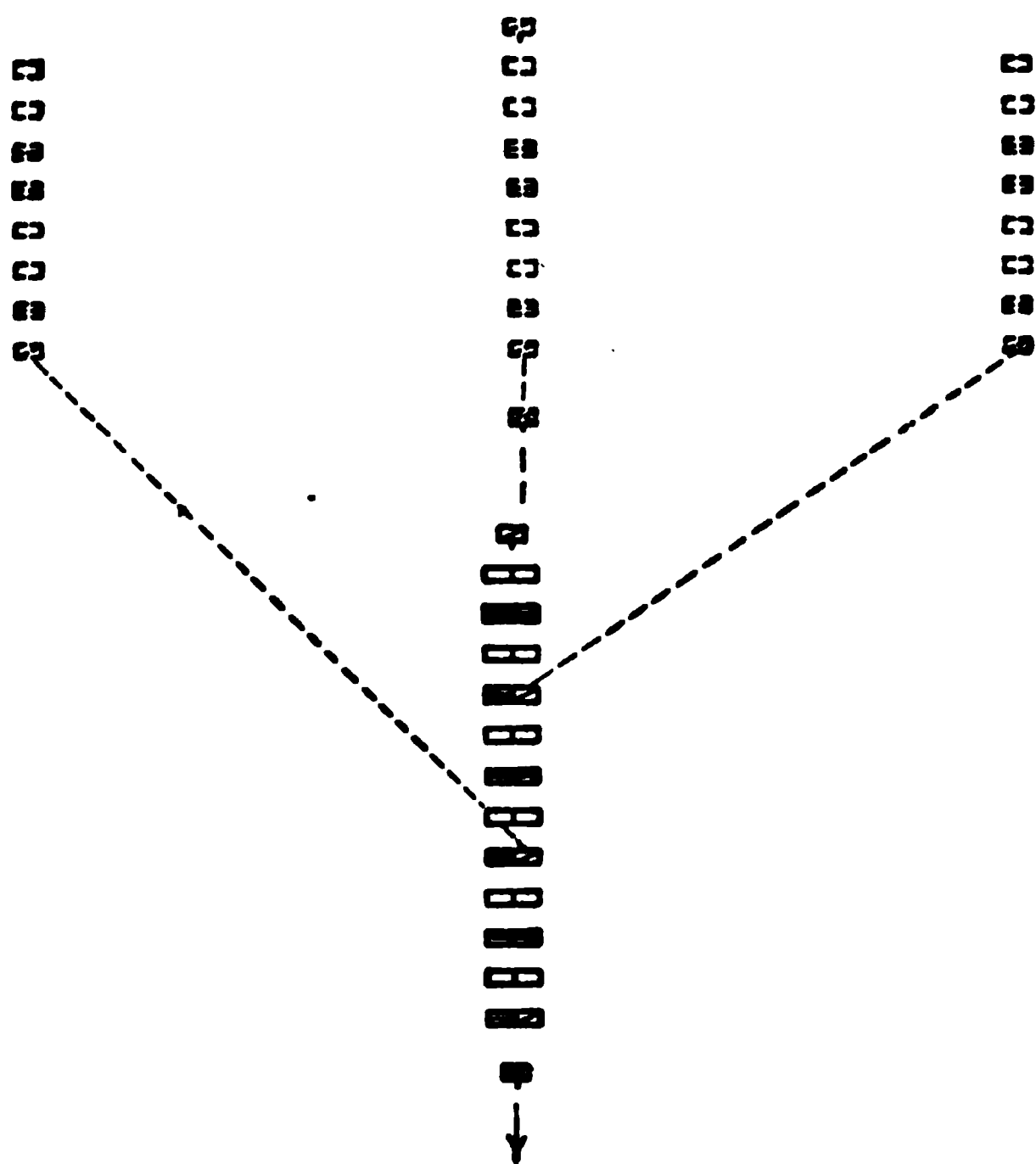
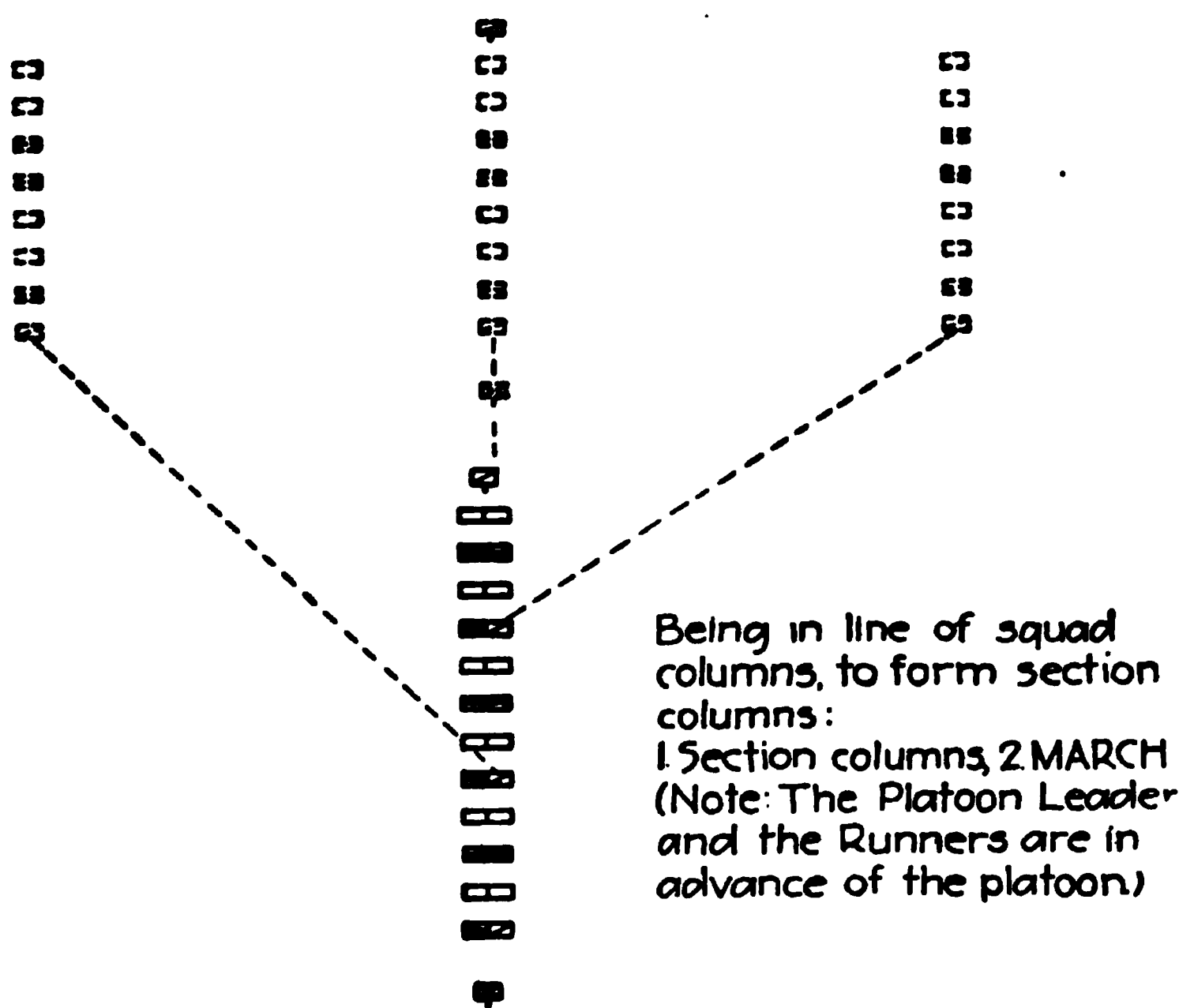


PLATE 208.

At the first command each section leader should caution "section column" and at the command MARCH, move forward in front of his section. Men move individually *at a run* toward their section leader and assemble by squads in column of twos behind him, squads in the same relative order as in normal formation of the section in close order, corporals at the head of their squads. Notice that the leading squad in each section before the deployment is made will also be the leading squad in the same section in this formation irrespective of its position in the skirmish line.

Section guides follow in rear of their respective sections to insure the prompt and orderly execution of the advance.

162. Intervals between skirmishers are increased or decreased from or toward the base squad, as described in the school of the squad, the command being 1. *As skirmishers, so many paces*, 2. MARCH.

The Assembly.

163. Being in skirmish line, to assemble, the platoon: The platoon leader takes post, at or designates, the point at which the platoon is to assemble and signals or commands, 1. *Assemble*, 2. MARCH. (See Plate 209.)

The platoon assembles in column of squads, in the same relative order as in the normal formation of the platoon in close order (right in front). Therefore, the platoon leader should make certain that the first section is in front (leading), before he assembles the platoon. The leading squad assembles as prescribed in the School of the Squad at the designated point. Men of the other squads move individually at a run towards the assembly point, corporals placing themselves in their normal position in column of squads in rear of the corporal of the leading squad, each squad assembling on its corporal. Section leaders, guides and runners take their prescribed posts. Notice that the assembly is not by squads, but each man, runs individually to his correct position in the column. Since the rear section is 50 paces in rear of the leading section, the corporal of the leading squad of this section should permit his men to start forward so as to arrive at the column the very moment the third squad of the leading section has assembled. There is a tendency in executing this movement to close up between ranks to less than 40 inches.

If assembled by squads or sections or in section or squad columns, these are conducted to the assembly point and formed in their normal relative order by squad or section leaders. This very important paragraph is often overlooked at drill. However, in carrying it out, sections and squads being conducted to the assembly point by their leaders, will be lead at a trail and in quick time, the leaders giving the command 1. *At trail*, 2. FOLLOW ME, leading their units to the proper place and forming them in proper squad or section formation.

If it is desired to execute any of the above assemblies rapidly or if it is desired to hasten the execution of the movement already started the command or signal for double time can be given.

The movement "section assemble" should be governed by the above paragraph.

164. Sections may be assembled by the command: 1. *Sections, assemble*, 2. MARCH.

Executed by each section, under the direction of its leader, as prescribed for the platoon. If this command is given while the platoon is marching, it continues the march after the movement is completed; if given at a halt the platoon remains halted.

165. Squads may be assembled by the command: 1. *Squads, assemble*, 2. MARCH.

Executed by each squad as described in the School of the Squad. If this command is given while the platoon is marching, it continues the march after the movement is completed; if given at a halt the platoon remains halted.

166. One section or one or more squads may be assembled by the command: 1. *(Such) Section or (such squad) (s), assemble*, 2. MARCH.

Being in skirmish line, to assemble the platoon:
1. Assemble, 2 MARCH

The platoon assembles in column of squads, in the same relative order as in the normal formation of the platoon in close order, 1st. squad in front.

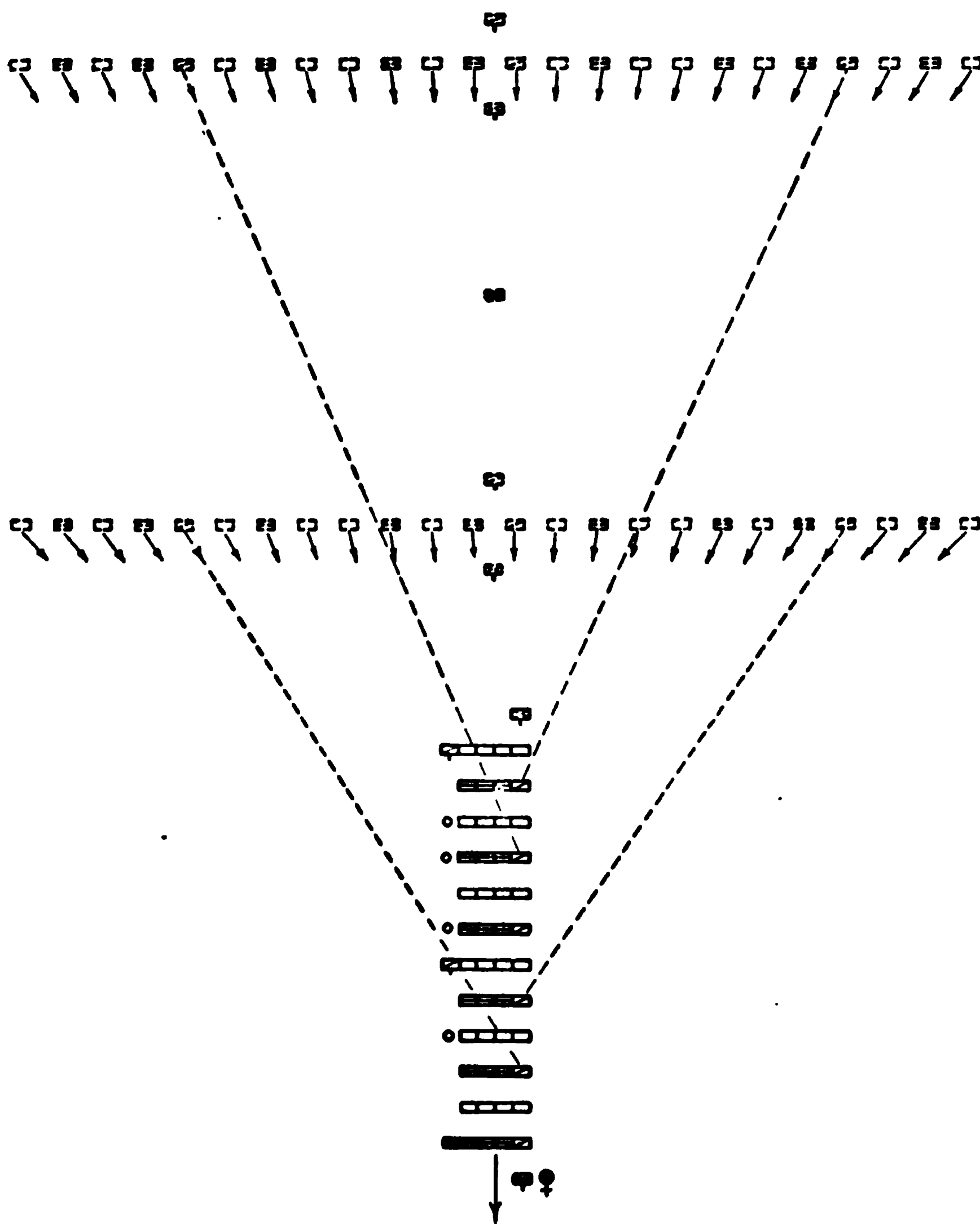


PLATE 200.

Advance by Rushes.

167. The purpose of a rush is to get from one place to another as quickly as possible, and with the greatest amount of initial surprise. The big idea is—not to let the enemy know the moment and from where you are going to rush and when you do rush, advance so rapidly, that you will be in your new position (if possible under cover) before the enemy has time to fire effectively at you. Advancing by rushes is used to advance against rifle or machine gun fire. For detailed information on this subject the student should study the subject of Scouting and Patrolling.

168. The command for a rush is: 1. *By section (squad, four men, etc.) from the right (left)*, 2. RUSH. Just as soon as the platoon leaders' command is understood, the leader of the indicated fraction gives the commands: 1. *Cease firing*, 2. *Prepare to rush*.

Being in skirmish line, to advance by squad rushes from the right: 1. *By squad from the right*, 2. RUSH. The corporal of the right squad commands: 1. *Cease firing*, 2. PREPARE TO RUSH. When the squad is ready he commands: UP, and running at top speed leads his squad to the new position under cover of the remaining squads of the section

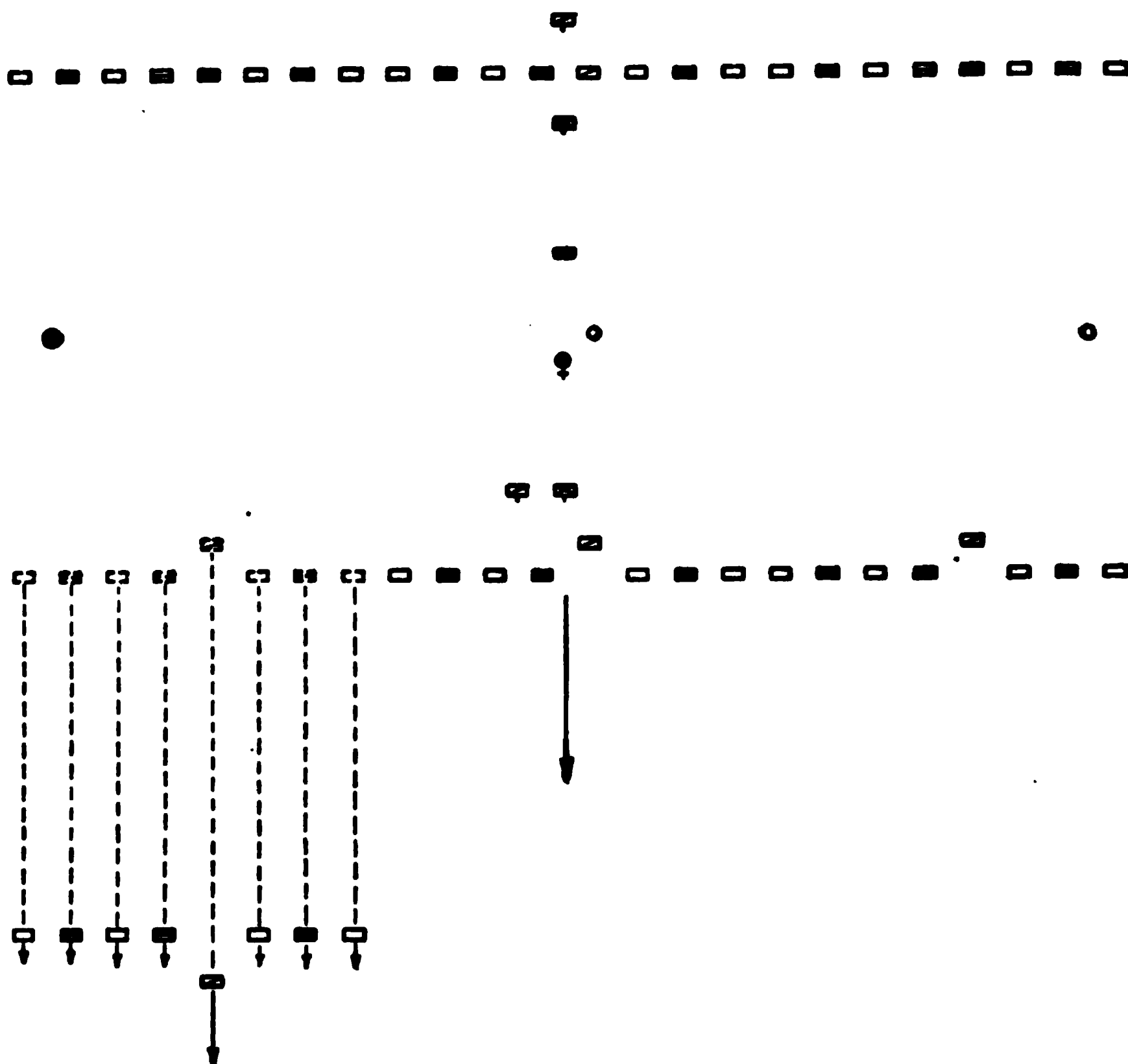


PLATE 210.

The men of the indicated fraction cease firing, and hold themselves in readiness to spring forward instantly, taking care not to betray to the enemy by any movement

of the body or the rifle the fact that a rush is about to take place. (During the Russo-Japanese War, the Japanese reported that they could usually tell when and where a Russian rush was to start because the above rule was violated. Needless, to say, the Russian losses were unnecessarily heavy.) At the command "prepare to rush," each man takes his rifle in his left hand, supports himself on his right hand, draws up the right knee close to the body, without raising the trunk from the ground. When ready, the leader of the rush commands UP; the leader and his men spring to their feet and, running at top *speed*, gain the new position where they throw themselves on the ground and immediately open fire. The leader of the rush selects the new line if it has not been previously designated. (It is a common error for men to close in towards the leader during a rush, and not to advance at top speed. Both of these faults can be overcome by proper training. The men of the leading wave not rushing continue to fire upon the enemy at an increased rate so as to offset the loss of the fire of the rushing element.

The first fraction having established itself on the new line the next like fraction is sent forward by its section leader, without further command of the platoon leader, and so on, successively, until the entire wave is on the line established by the first rush. The platoon leader may direct that successive fractions execute the rush only upon his signal. During field exercises, the rushes are usually too close together, that is, there is not enough time between each rush, whereas, during war, they are made, if any thing with too great a time interval, which is more desirable than the former method.

A rear wave (section) advances to the position vacated by the leading wave, or remains in its original position or otherwise maneuvers according to circumstances, as directed by the platoon leader or on the initiative of the section leader.

When the leading wave comprises more than one section, the rush of the wave as a whole is conducted by the platoon leader, as described for a section in the preceding paragraph. The platoon leader leads the rush; section leaders lead their respective sections. In order to obtain full advantage of the effect of surprise, the fraction initiating the rush should be as large as possible.

Advance by Infiltration.

169. This method of advance was first used with very marked success by the Germans in their early drives during 1918 of the World War. The Americans, however, soon followed suit, and became quite skillful in advancing by infiltration, before the war ended. Only highly trained and disciplined troops should attempt to advance by infiltration.

170. Being in skirmish line, to cross open, fire-swept areas by independent advances of individuals or squads, the platoon leader commands: 1. *On (such line, e. g., crest, hedge, road, etc.)*, 2. REFORM.

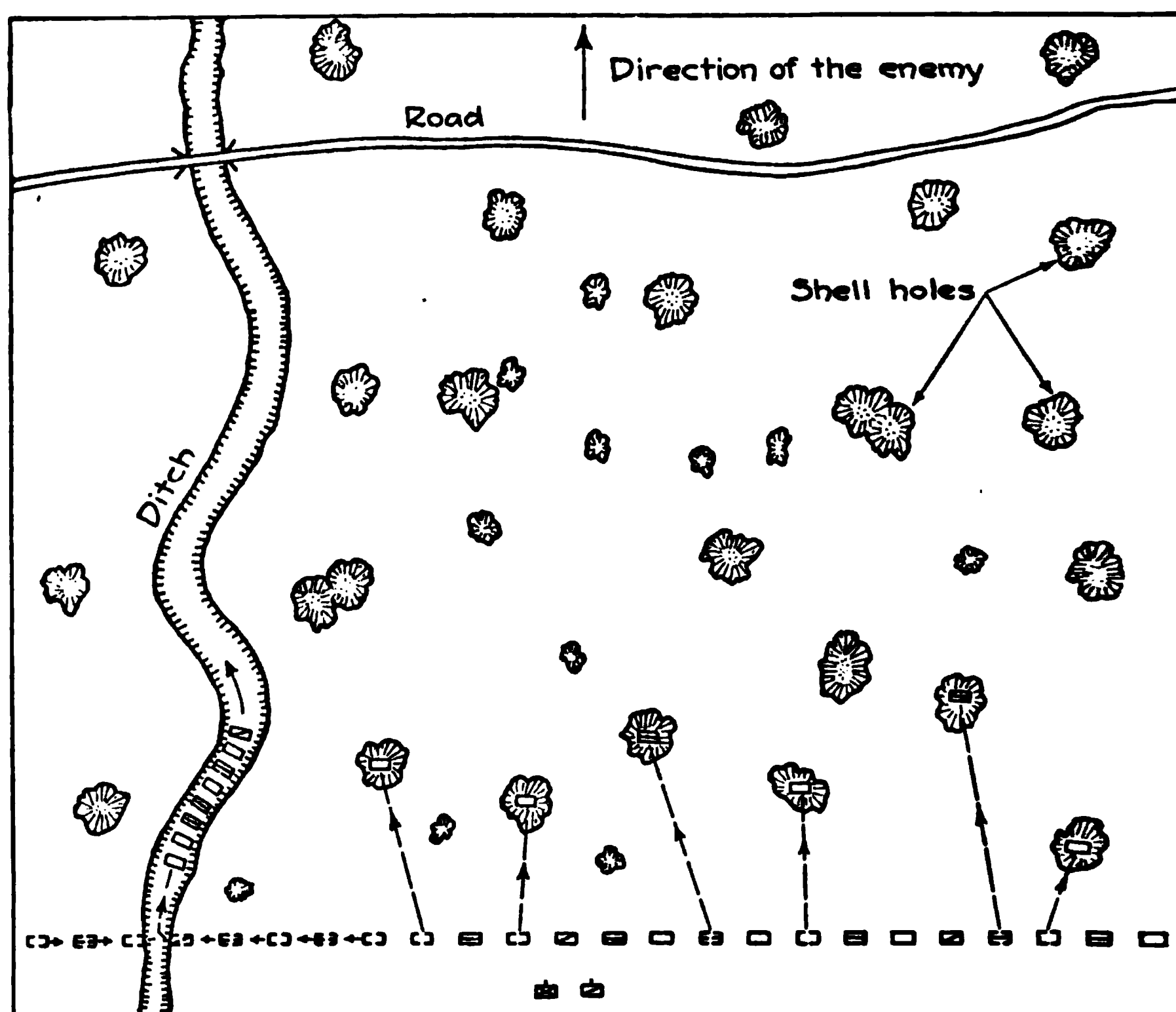
Each squad leader decides on the best method of reaching the designated line, whether by leading the squad as a whole along a covered route or by men working their way forward individually.

The platoon leader must recover control over his platoon at the designated position before attempting a further advance.

This method of advance finds especial application at long range or when the source of hostile fire cannot be discovered and beaten down.

It is a very common error for inexperienced leaders to use this method of advance, when it is not necessary to do so. It should only be used as a measure of last resort, because of the loss of control which inevitably follows.

Note that each squad leader decides on the best method of getting his squad forward. He may move it forward as a squad, or divide it into two groups of four men each, or send men forward individually. However, this latter method should never be used when the squad can be sent forward by two, three, or four men at a time. (See Plate 211, page 220.)



Being in skirmish line, to cross open, fire-swept areas by independent advances of individuals or squads. The platoon leader commands: 1. On that road, 2. Reform. In this situation the corporal of the left squad in this section leads his men, under cover of the ditch, to the road. The corporals of the remaining squads send their men forward individually from cover to cover.

PLATE 211.—Infiltration.

LOADINGS AND FIRINGS.

Importance. Fire discipline is often very difficult to obtain, largely because the importance of the subject is not properly impressed on the students. Not only in the class room, but at drill, the parts of the Drill Regulations that pertain to the loadings and firings are often slighted with the result that the units' fire discipline is rated as poor by the inspector. All should remember that field exercises are given a greater weight by the inspector than close or extended order drills. There should be a rifle in the class room when the class is reciting on this lesson, which should be taught by means of demonstrations and not by recitations alone.

Definitions.

171. Battle sight: The position of the rear sight when the leaf is laid down. With the 1903 rifle, the battle sight implies a range of 546 yards.

Front: The direction of the enemy. When a combat situation does not exist or is not assumed, the front is the direction toward which the command is faced, also the side of a force or position toward the enemy. When the squads deploy, their front is the direction in which the men are facing when they reach the deployed line.

General Rules.

172. a. The commands for loading and firing are the same whether standing, kneeling, or lying down.

b. When kneeling or lying down in double rank, the rear rank does not load, aim, or fire. The rear rank often forgets this.

c. The instruction in firing will be preceded by a command for loading. The instructor often forgets this.

d. Loadings are executed in line and skirmish line only. This is a most important rule, as it is dangerous and forbidden to load and fire while in column of squads.

e. Rifles having been ordered loaded are kept loaded without command until the command UNLOAD or inspection ARMS, fresh clips being inserted when the magazine is exhausted. This rule is often forgotten.

f. The target is carefully pointed out. This may be done before or after announcing the sight setting. Both are indicated before giving the command for firing. The entire subject of aiming is taught during the instruction in Rifle Marksmanship. The designation of the target may be omitted when the target appears suddenly and is unmistakable, but the range must always be announced, the command BATTLE SIGHT being given when it is not desired to have the sights set. For instance, if a hostile troop of cavalry should be suddenly encountered 300 yards away, it would be unnecessary to say "target that troop of cavalry." All the leader would have to announce is 1. BATTLE SIGHT, 2. FIRE AT WILL.

g. The command for range serves as a preparatory command for firing; it insures the simultaneous opening of fire and the full effect of surprise.

h. The target having been designated, such designation need not be repeated until a change is necessary. For instance, if while the firing is directed at a troop of cavalry, the commands "suspend firing" and later on "range 600. FIRE AT WILL," are given, firing would be resumed again on same troop of cavalry despite the appearance of another target. Following the command SUSPEND FIRING the men observe the target.

i. Troops are trained to continue their fire upon the aiming point or target designated until a change is ordered. (This rule is often forgotten.)

j. Here is a most important rule. If the men are not already in the position of load, that position is taken at the announcement of the range. Skirmishers not in a firing position, either at a halt or in movement, take such position at the command announcing the range.

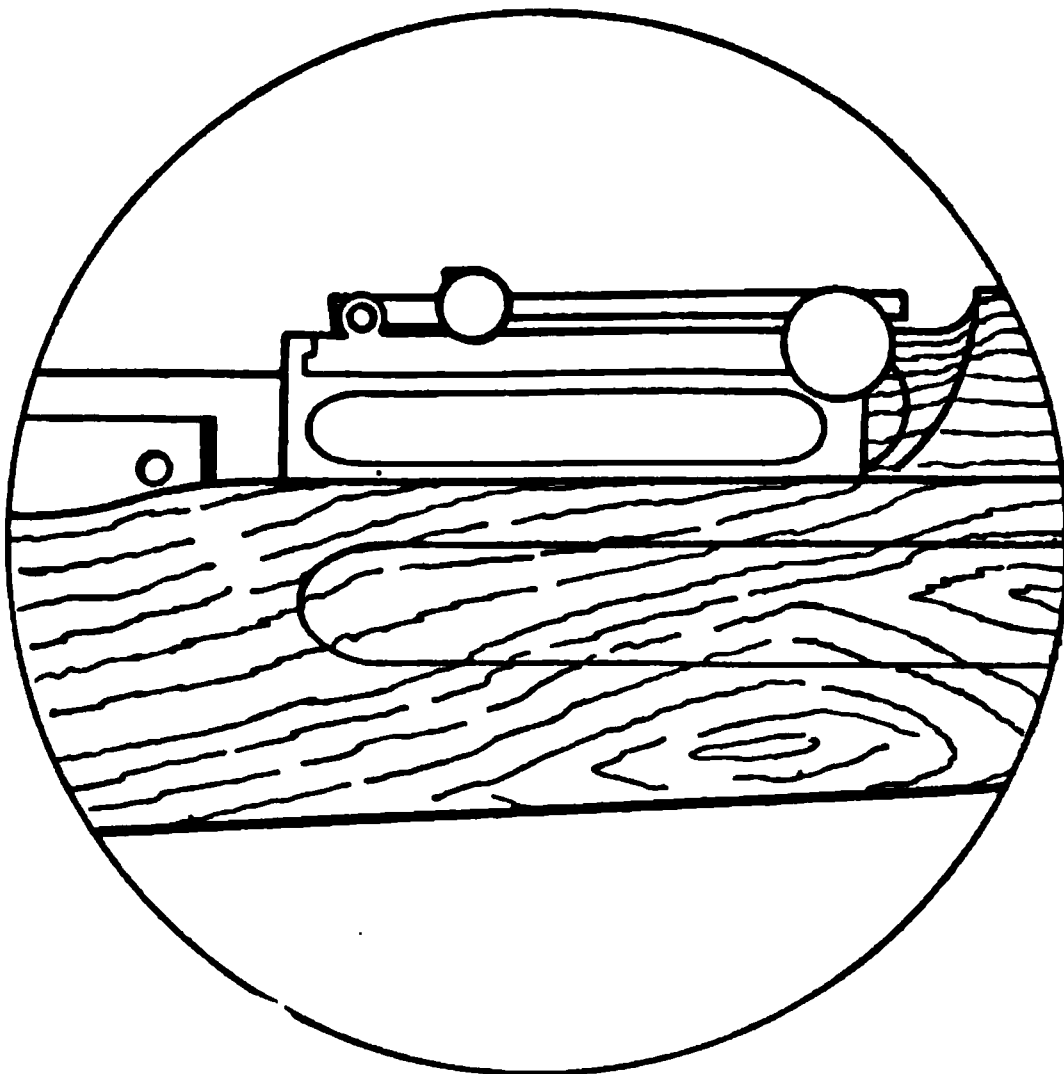


PLATE 212.—Battle Sight.

k. The use of the sling as an aid to accurate firing is desirable at all ranges and is absolutely essential at ranges greater than 300 yards. The reasons for using the sling is fully covered in Rifle Marksmanship.

l. Auto-riflemen do not execute the loadings or firings in line (close order).

To Load.

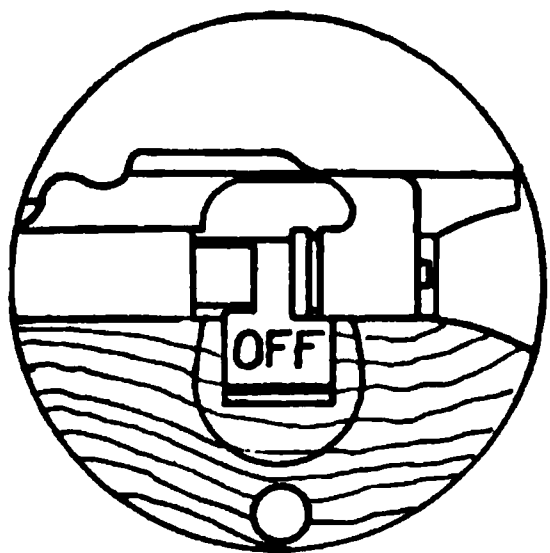
It is well for the instructor to execute each of these movements in detail before asking the student to recite.

The best way to learn the following movements is to get a rifle, and as you read the text execute each movement in detail. If you attempt to memorize these movements, little progress may be expected.

173. Being in line or skirmish line at halt, the command is: 1. *With dummy (blank or ball) cartridges*, 2. LOAD.

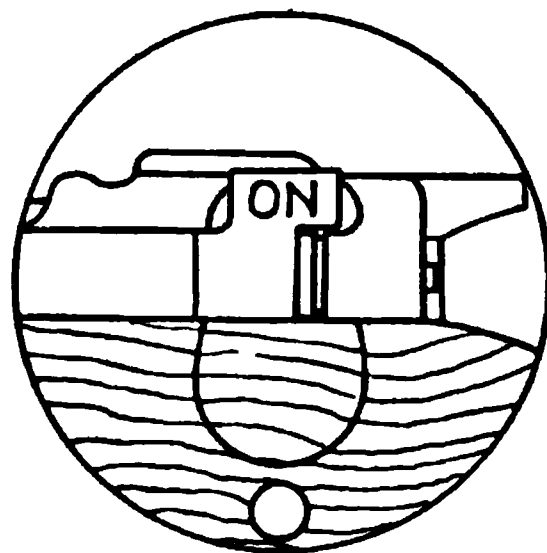
At the command LOAD each front-rank rifleman or skirmisher faces half right and carries the right foot to the right, about 1 foot, to such position as will insure the greatest firmness and steadiness of the body; raises, or lowers, the piece and drops it into the left hand at the balance, *left thumb extended along the stock*, muzzle at the height of breast and if armed with the model 1903 rifle, turns the cut-off up. With the right hand, he turns and draws the bolt back, takes a loaded clip and inserts the end in the clip slots, places the thumb on the powder space of the top cartridge, the fingers extending around the piece and tips resting on the magazine floor plate; by pressing down with the thumb, without removing the clip, thrust the bolt home, turning down the handle; turns the safety lock to the "safe" and carries the hand to the small of the stock, and remains in the position of load.

Now let us see what the rear-rank men do. Each rear-rank rifleman moves to the right front, takes a similar position opposite the interval to the right of his



No. 1

When cartridges are not used
turn the cut off to this position.



No. 2

When cartridges are used
turn the cut off to this position.

PLATE 213.

front-rank man, muzzle of the piece extending beyond the front rank, and loads. The man in the rear rank often forgets to step up into the interval on his right and to get the muzzle of his rifle well forward and up so that it extends beyond the front rank. The instructor should always be in the rear of his men when loading or unloading. After giving LOAD or UNLOAD, it is customary to have the file closers inspect the pieces to see that the safety lock is in the correct position.

When in skirmish line the movement is executed by both ranks as described above for the front rank.

A skirmish line may load while moving, the pieces being held as nearly as practicable in the position of load.

If kneeling or sitting the position of the piece is similar. If kneeling, the left forearm rests on the left thigh. If sitting, the elbows are supported by the knees. If lying down, the left hand steadies and supports the piece at the balance, the toe of the butt resting on the ground, the muzzle off the ground. These positions are shown in the plates in Rifle Marksmanship.

For reference, these positions (standing, kneeling, and lying down) are designated as that of *load*.

For instruction in loading: 1. *Simulate*, 2. **LOAD**.

Executed as above described except that the cut-off (model 1903 rifle) remains "off" (Plate 213, No. 1) and the handling of cartridges is simulated.

The word simulate means to imitate, to go through the motions of.

The recruits are first taught to simulate loading and firing; after a few lessons, dummy cartridges may be used. Later, blank cartridges may be used.

The model 1903 rifle may be used as a single loader by turning the magazine "off."

The magazine may be filled in whole or in part while "off" or "on" by pressing cartridges singly down and back until they are in the proper place. The use of the rifle as a single loader is, however, to be regarded as exceptional.

To Unload.

174. *Unload*. Take the position of load (each man in the rear rank steps up into the interval on the right), turn the safety lock (model 1903 rifle) up, and moves the bolt alternately back and forward until all the cartridges are ejected. After the last cartridge is ejected, the chamber is closed by first thrusting the bolt slightly forward to free it from the stud holding it in place when the chamber is open, pressing the follower down and back to engage it under the bolt, and then thrusting the bolt home; the trigger is pulled. The cartridges are then picked up, cleaned and returned to the belt and the pieces are brought to the order. NOTICE, that in this movement the pieces are brought to the order arms without command, whereas, in executing **LOAD**, they are held in the position of load until further commands are given.

In unloading, men forget to pull the trigger when all cartridges are thought to be ejected or to have the muzzle pointed up, when the trigger is pulled. This is an important safeguard, because, sometimes, a cartridge remains in the barrel, with the result that an accident occurs.

In loading and unloading, there is often an unnecessary amount of moving around, talking and gazing about. This should be promptly checked. When at close-order drills, these movements are executed at attention.

175. *To set the sight*. **RANGE, ELEVEN HUNDRED (EIGHT FIFTY, etc.) or BATTLE SIGHT or SAME RANGE.**

The sight is set at the elevation indicated. The instructor explains and with his assistants verifies sight settings.

The command for this movement is a long one, and is often not given properly. This is also the case with the other commands for loadings and firings. All commands should be *memorized*. Poor or inaccurate commands are followed by poorly executed and inaccurate movements.

176. *To fire by volley*. 1. *Ready*, 2. **AIM**, 3. *Squad*, 4. **FIRE**.

At the command "ready," turn the safety lock to the "ready"; at the command **AIM**, raise the rifle with both hands and support the butt firmly against the hollow of the right shoulder, right thumb clasping the stock, barrel horizontal, left elbow well under the piece, right elbow as high as the shoulder. Incline, the head slightly forward and a little to the right, cheek against the stock, left eye closed, right eye looking through the notch of the rear sight so as to perceive the object aimed at, second joint of forefinger resting lightly against the front of the trigger and taking up the slack; top of front sight is carefully raised into, and held in, the line of sight. (Spend your spare time on how to take up this position, and not on how to aim. The question of aiming is covered in Rifle Marksmanship.)

Each rear-rank man aims through the interval to the right of his file leader and leans slightly forward to advance the muzzle of his piece beyond the front rank.

In aiming kneeling, the left elbow rests on the left knee, point of elbow in front of knee-cap. In aiming sitting, the elbows are supported by the knees.

In aiming lying down, raise the piece with both hands; rest on both elbows and press the butt firmly against the right shoulder.

At the command FIRE, press the finger against the trigger; fire without deranging the aim and without lowering or turning the piece; lower the piece in the position of *load* and load.

Fire by volley has limited uses. It is used mostly at military funeral ceremonies to fire the three volleys over the grave of the deceased. Its uses during battle will be covered in the subject of Minor Tactics. The platoon and section are the only units that ever fire by volley in combat.

To continue the firing: 1. AIM, 2. *Squad*, 3. FIRE.

Each command is executed as previously explained.

LOAD (from magazine) is executed by drawing back and thrusting home the bolt with the right hand, leaving the safety lock at the "ready." NOTICE, that the piece is not at the shoulder when it is loaded after each volley.

177. *To fire at will.* 1. FIRE AT WILL. (Notice that the command itself is a command of execution.)

Each man, independently of the others, comes to the *ready*, aims carefully and deliberately at the aiming point or target, *fires*, *loads*, and continues the firing until ordered to *suspend* or *cease firing*. Fire at will is the class of fire normally employed in battle. The rate of fire is from three to five shots a minute, dependent on the range and visibility of the target. The student should realize that three aimed shots a minute are more effective than 10 unaimed ones and that one of the greatest difficulties in battle is to get ammunition to the firing line.

178. *Clip fire.* To fire by clip: 1. CLIP FIRE.

Executed in the same manner as *fire at will*, except that each man, after having exhausted the cartridges then in the piece, *suspends firing*. (Not cease firing.)

Clip fire has limited application. It is principally used: (1) In the early stages of combat to steady the men by habituating them to brief pauses in firing; (2) to produce a short burst of fire.

To increase (decrease) the rate of fire, the instructor commands: FASTER (SLOWER).

The rate of fire is to a large extent dependent on the training of the individual.

It must not be so great as to preclude accurate aim or proper trigger squeeze.

Men are trained to fire at the rate of about three shots per minute at mid ranges (600 to 1200 yards) and five or six at close ranges (0 to 600 yards), devoting the minimum of time to loading and the maximum to deliberate aiming. To illustrate the necessity for deliberation, and to habituate men to combat conditions, small and comparatively indistinct targets are designated.

179. *To suspend firing.* The instructor blows a *long blast* of the whistle and repeats same, if necessary, or commands: SUSPEND FIRING. Firing stops; pieces are held, loaded and locked, in a position of readiness for instant resumption of firing, rear sights unchanged. The men continue to observe the target or aiming point, or the place at which the target disappeared, or at which it is expected to reappear. Suspend firing is used to cause a *temporary* cessation in the firing to steady the men, to change the range or target or to give instructions.

This whistle signal may be used as a preliminary to *cease firing*.

180. *To cease firing.* The command is: CEASE FIRING.

Firing stops; pieces not already there are brought to the position of load; those not loaded are loaded; sights are laid; pieces are locked and brought to the order.

Cease firing is used for long pauses to prepare for changes of position or to steady the men.

NOTICE, that the pieces are loaded, locked and the rear sights remain up and unchanged when the command is "suspend firing," and they are loaded, locked, rear sights laid, and the position of order arms resumed, when the command is "cease firing." It is important that the differences in the execution as well as the purpose of these two movements be clearly understood. The beginner very often fails to understand the difference between suspend and cease firing largely because he doesn't understand their uses or purpose.

Commands for suspending or ceasing fire may be given at any time after the preparatory command for firing whether the firing has actually commenced or not.

SCHOOL OF THE COMPANY.

181. Up to this point the drills have been for the training and instruction of the man in the ranks, whereas from here on it is largely for the instruction of the officers and guides. Therefore, the School of the Company is treated and explained more from the point of view of the captain, platoon leaders and guides than from the point of view of the private.

182. The company at full strength, according to the present table of organization, comprises four platoons of six squads each and company headquarters.¹ This organization will be maintained until the number of squads in the company falls below twelve. A company of less than twelve and more than eight squads will be organized into three platoons; one of less than nine and more than five squads into two platoons. Within these limits, the permanency of platoons will be maintained and transfers of personnel between platoons avoided as far as practicable.

It is very seldom, even in the Regular Army, that a company has four full platoons or is at full strength. This maximum or full-strength organization is attained during war.

Formations.

183. The formations of the company are shown in Plates 215 and 216. It is most important that everyone become perfectly familiar not only with each formation, but with the name of each, the positions of the officers and non-commissioned officers and such factors as distances and intervals. We wish to place special emphasis on the importance of the students becoming familiar with these formations.

Of these formations the first two (line and column of platoons) are assembly, ceremonial and drill formations; they have no application to field service or deployments. In close-order drill, the formation in line is exceptional; column of platoons will be habitually employed for drilling troops in marching in line. We wish to place special emphasis on the fact that the company is practically never *marched in line*. The column of squads and line of platoons (modified according to conditions) are employed on the march, in the advance into action (in battle) and in deployments for attack and defense.

184. The company assembles in formation, "in line" or "close column" of platoons.

At the formation of the company in line the platoons are numbered consecutively from right to left and these designations do not change. Inexperienced instructors often forget this rule.

For convenience in giving commands and for reference, the designations right, center, left, when in line, and leading, center, rear, when in column are applied to platoons. These designations apply to the actual right, left, center, head or rear, in whatever direction the company may be facing. The center platoon is the actual center or right center platoon of the company. The designation "so and so's platoon" may also be used.

Lieutenants are assigned as follows:

Senior 1st lieutenant, second in command.

2nd senior 1st lieutenant, commanding 1st platoon.

Junior 1st lieutenant, commanding 4th platoon.

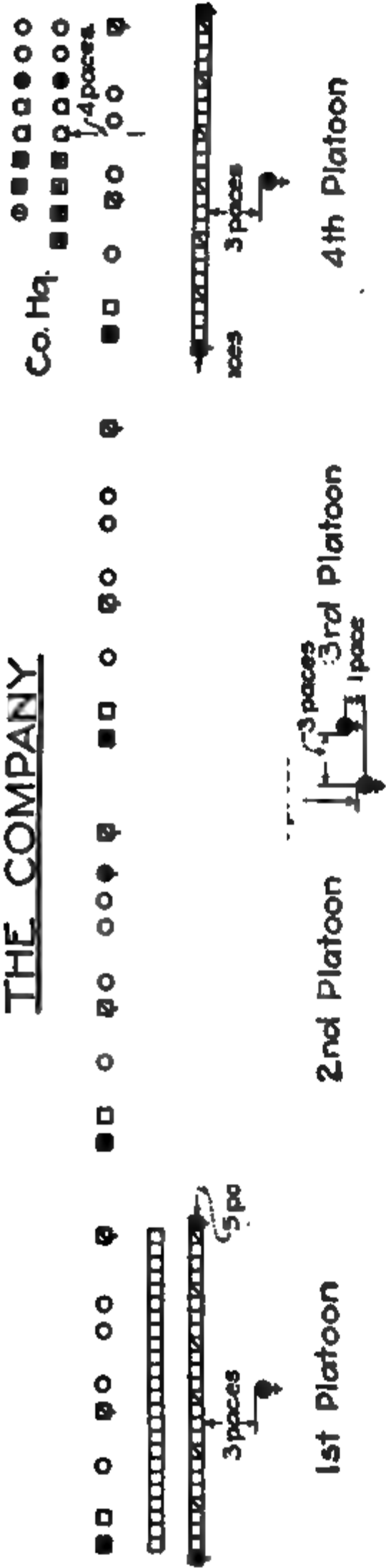
Senior 2nd lieutenant, commanding 2nd platoon.

Junior 2nd lieutenant, commanding 3rd platoon.

The four senior duty sergeants are assigned as assistants to platoon leaders, one with each platoon; and are designated as platoon sergeants. The next in rank are assigned as guides, two to each platoon; in section movements and in extended order, they command sections.

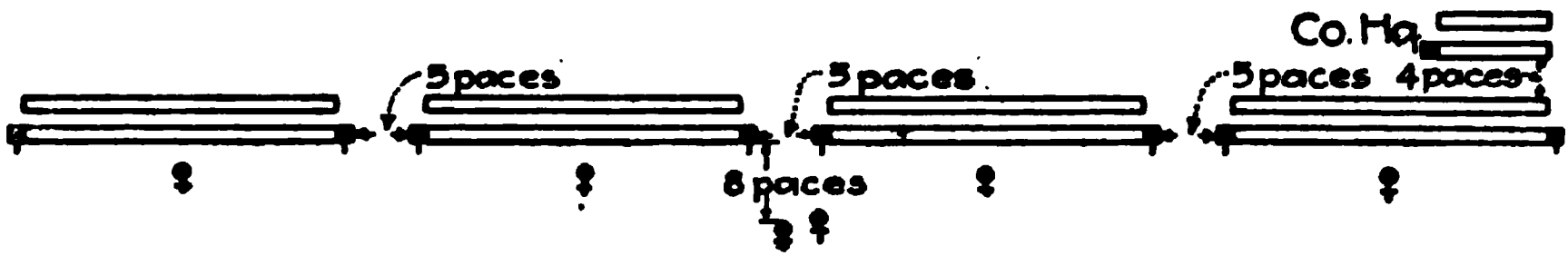
¹ It is highly possible and believed desirable that the tables of organizations will be changed in the near future making an infantry company consist of three platoons.

THE COMPANY

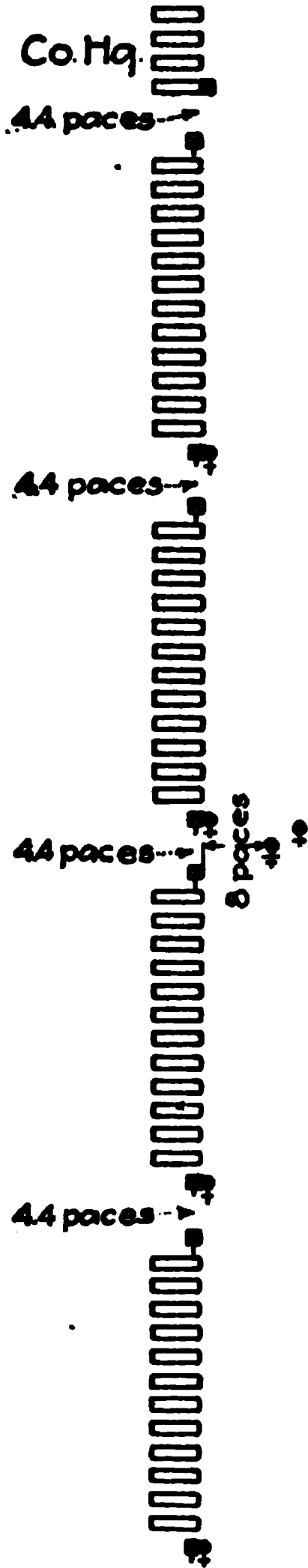


LEGEND

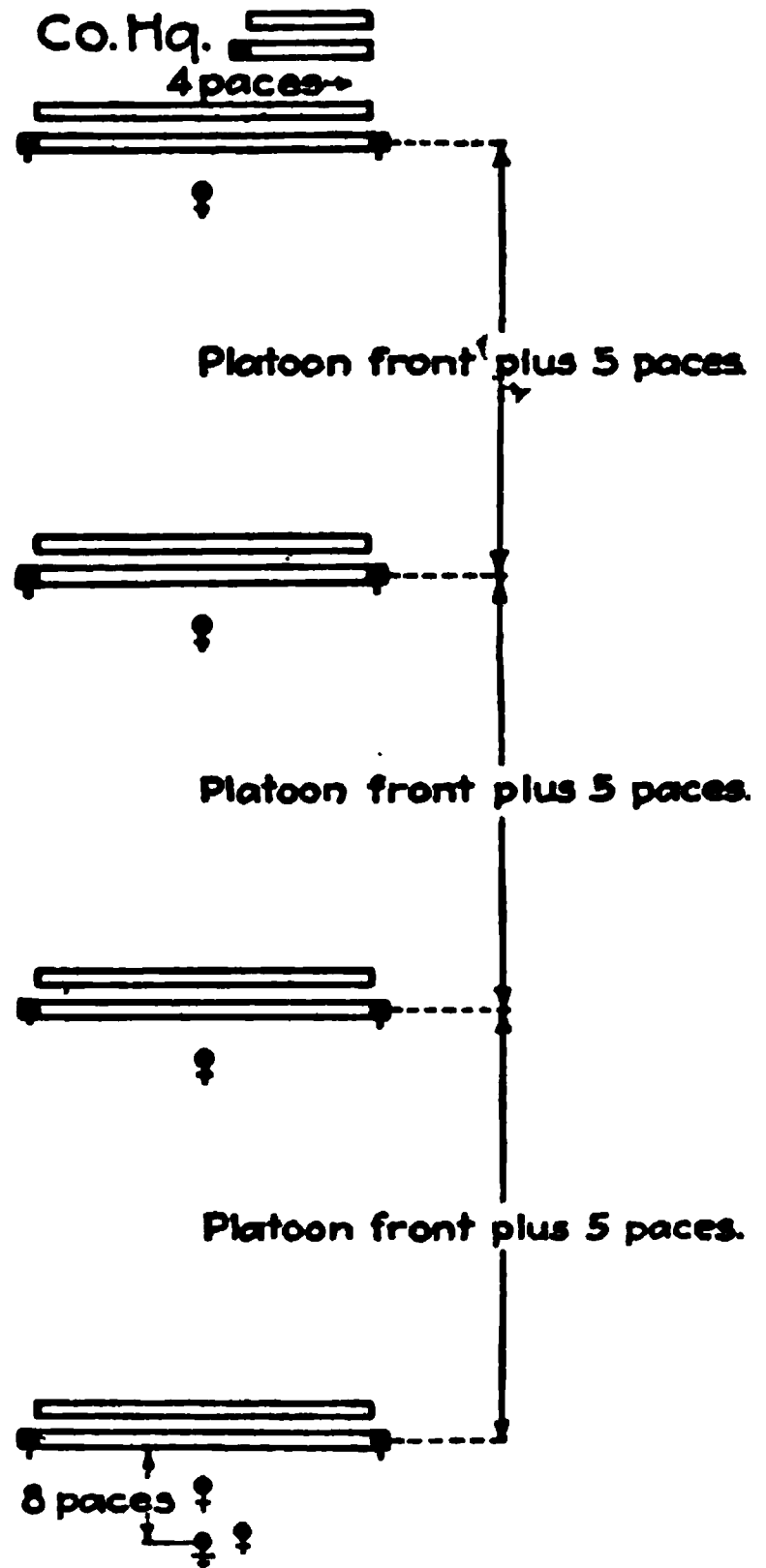
●	①	Corporal (Co. Clerk)
+	☑	Corporals (Squad Leaders)
●	☐	Cooks
■	○	Mechanics.
⊠	⊙	Buglers.
⊞	○	Signalmen, Agents, Runners.
⊟	□	Privates



LINE
(Platoons in line)



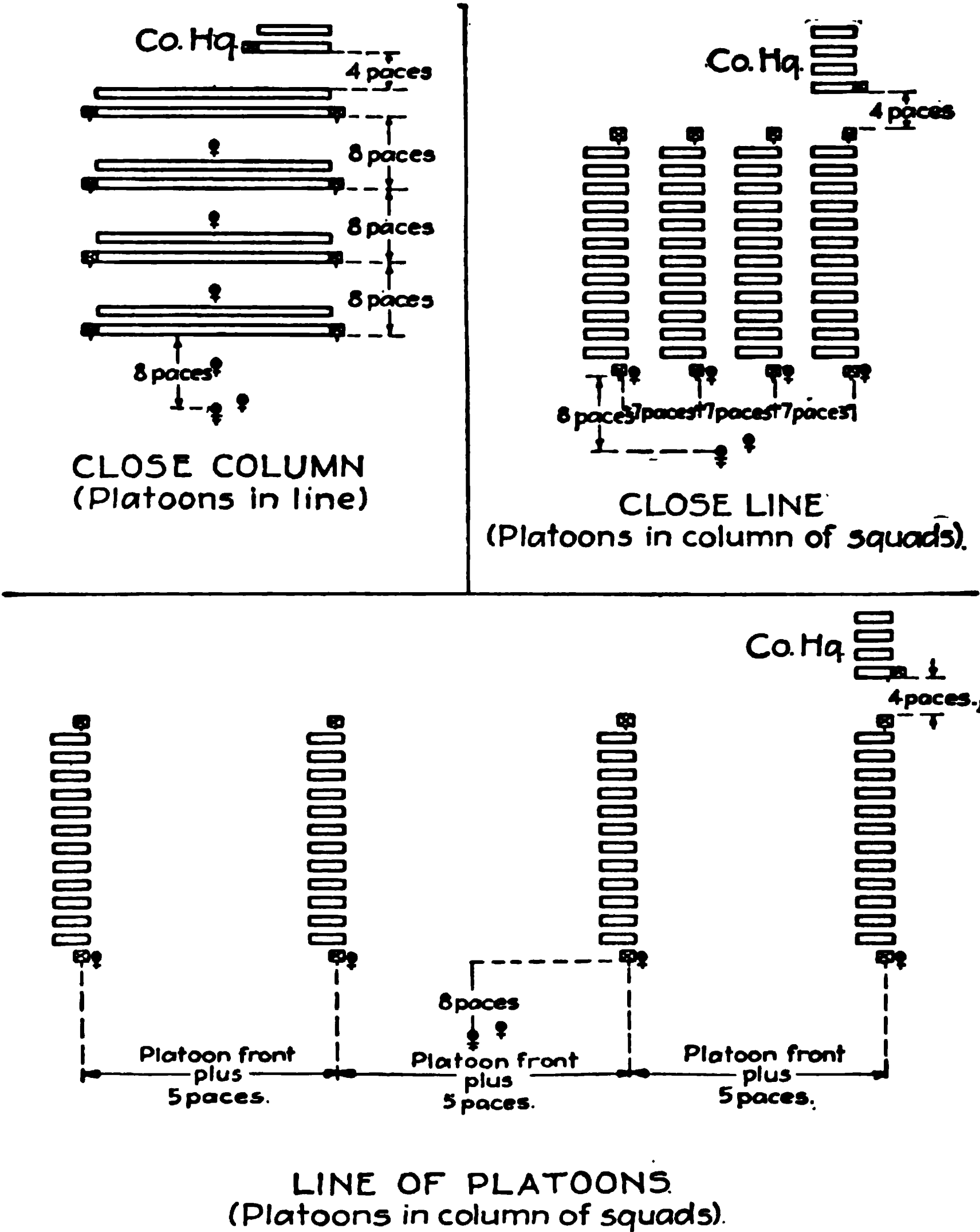
COLUMN
OF SQUADS



COLUMN OF PLATOONS
(Platoons in line)

FORMATIONS OF THE COMPANY

Note: All intervals and distances are measured between guides



FORMATIONS OF THE COMPANY.

PLATE 216.

The first sergeant, supply sergeant and mess sergeant are not assigned as guides.
185. Company headquarters detachment.

There are certain non-commissioned officers and men in each company that are specially trained to assist at company headquarters, to carry messages and to do special technical work. They are called the company headquarters detachment and are formed by the senior non-commissioned officer or private present, in the positions shown in the various company formations.

For purposes of instruction members of the detachment may be attached to a platoon and with the platoon runners temporarily organized into an extra squad. Such attachment must not affect the permanent squad organization of the platoon.

Except at ceremonies, the special units have no fixed places. They take places as directed; in the absence of directions they conform as nearly as practicable to the

plates (Nos. 215 and 216) and in subsequent movements maintain their relative positions with respect to the flank or end of the command on which they were originally posted.

186. A company of less than six squads is led by the captain as a single platoon, but retains the designation of company.

The lieutenants and first sergeant command sections or assist in fire control; the other sergeants place themselves in the firing line as skirmishers.

Close-Order Rules.

187. Platoon leaders repeat such preparatory commands as are to be immediately executed by their platoons, as *forward*, *squads right*, etc.; the men execute the commands MARCH, HALT, etc., if applying to their platoons when given by the captain. In carrying out this rule the captain must allow sufficient time between his preparatory command and his command of execution to permit the platoon leaders to give the necessary commands. If this is not done the command of execution will not be heard as it will probably be given as the platoon leaders are shouting out commands, or before the men in ranks have mentally digested the preparatory command and are ready for the command of execution. It is a good rule for the captain to be some distance from the company and not to give the command of execution until he has heard the preparatory command of each of his platoon leaders, who will thus be forced to give their commands in a loud tone. This rule also gives the captain an opportunity to correct the platoon leaders in case they give incorrect preparatory commands.

In movements executed in route step or at ease the platoon leaders repeat the command of execution if necessary. Platoon leaders do not repeat the captain's commands (either preparatory or those of execution) in executing the manual of arms, nor those commands which are not essential to the execution of a movement by their platoons, as *column of squads*, *first platoon*, etc. In giving commands or cautions, platoon leaders may prefix the numbers of their platoons, as *1st platoon*, HALT, *2nd platoon*, *squads right*, etc.

To revoke a preparatory command, or, being at a halt, to begin anew a movement improperly begun, the captain commands AS YOU WERE, whereupon the movement ceases and the former position is resumed.

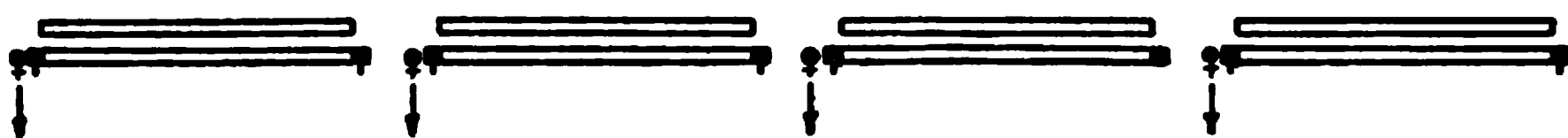
188. Unless otherwise announced, the guide of a platoon or subdivision of a company in line is right; of a company in line or line of subdivisions, center; of a rank in column of squads, toward the side of the guide of the column.

To march with guide other than as prescribed above, or to change the guide:
1. *Guide*, 2. RIGHT (left or center).

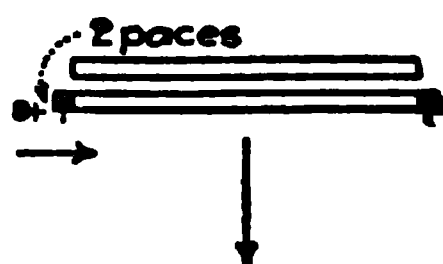
In successive formations into line the guide is toward the point of rest; in platoons or larger subdivisions, it is so announced.

The announcement of the guide, when given in connection with a movement, follows the command of execution for that movement.

189. At the command GUIDE CENTER (right or left), platoon leaders command: GUIDE RIGHT or LEFT, according to the positions of their platoons. GUIDE CENTER designates the left guide of the center platoon. Remember that the center platoon is the actual center or right center platoon (2nd platoon from the right) of the company.



Positions of the platoon leaders while dressing their platoons, the company being in line.



Position of the platoon leaders while dressing their platoons, the company being in column of platoons.

PLATE 217.

190. There are two positions (each on that flank towards which the dress is to be made) from which the platoon leaders dress their platoons as follows:

The company in line: Beside the guide (or the flank file of the front rank, if the guide is not in line) and facing to the front.

The company in column of platoons: Two paces from the guide, in prolongation of and facing down the line.

Each platoon leader, after dressing his platoon, commands FRONT and takes his post. Some platoon leaders wait for the captain to give the command FRONT, which is incorrect.

191. This is a most important rule.

The company being in line and unless otherwise prescribed, at the platoon leader's command DRESS, or at the command HALT, when it is prescribed that the platoon shall dress, the guide on the flank away from the point of rest, with his piece at right shoulder, dresses promptly on the platoon leader and the platoons beyond, thus establishing with the platoon leader the line upon which the latter dresses the platoon. Note that the platoon leader must take his correct post or the guide cannot put this rule into execution. During the dress he (guide) moves, if necessary, to the right and left only; the platoon leader dresses the platoon on the line thus established. The guide takes the position of order arms at the command FRONT.

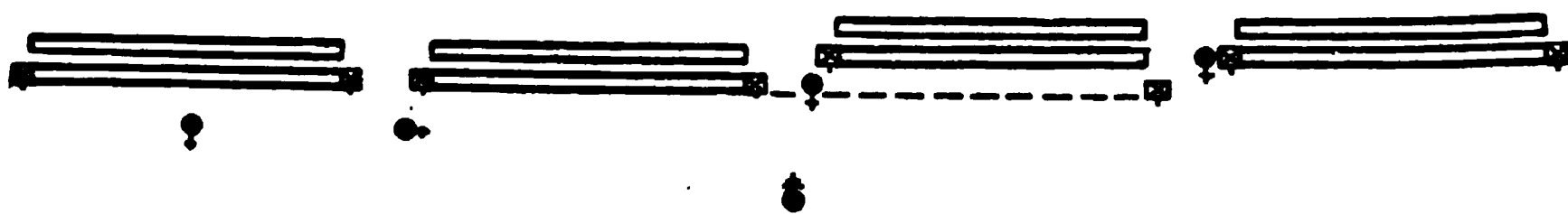


PLATE 218.—Method of Dressing a Platoon, the Company Being in Line.

In this plate the platoon leader of the first platoon has dressed his platoon and has taken his post. The platoon leader of the second platoon is commanding FRONT. The platoon leader of the third platoon places himself in line with the second platoon and the left guide, with his piece at the right shoulder, dresses on the platoon leader and the platoon beyond. When the left guide has dressed, the platoon leader commands: 1. *Right*, 2. DRESS. The leader of the fourth platoon is waiting for the third platoon to dress.

Example: The company is in close column of platoons at a halt and the command is: 1. *Left front into line*, 2. MARCH. The left guide of the leading platoon comes to the right shoulder at his platoon leader's command DRESS. The left guides of the rear platoons remain at the right shoulder when their platoons are halted on the new line and establish the new line. Each comes to the order at the command FRONT, given by his platoon leader.

192. The company executes the halt, rests, facings, steps and marchings, manual of arms, resumes attention, kneels, lies down, rises, stacks and takes arms as explained in the School of the Soldier and Squad, substituting in the commands *company* for *squad*.

The company executes squads right (left), squads right (left) about, route step and at ease and obliques and resumes the direct march, as explained in the School of the Platoon.

The company in column of squads, twos, or files changes direction, in column of squads forms column of twos or files and reforms columns of twos or squads as explained in the School of the Platoon.

193. When the formation admits of the simultaneous execution by platoons of movements in the School of the Platoon, the captain may cause such movements to be executed by prefixing, when necessary, the word "platoons" to the commands prescribed therein, as 1. *Platoons, right front into line*, 2. MARCH. In executing this simultaneous movement each platoon at the command MARCH executes independently "right front into line." To complete such simultaneous movements the commands HALT or MARCH, if prescribed, are given by the captain. The command FRONT, when prescribed, is always given by the platoon leaders.

Remember that a simultaneous movement is when the platoons execute the movement at the same time. The command "platoon," when given at the first of the preparatory command, signifies that the movement is to be a simultaneous one.

194. The company as a unit executes the loadings and firings only in firing saluting volleys. In battle it never fires by volley as a unit. The commands are as for the platoon, substituting the word *company* for *platoon*. At the first command for loading, platoon leaders take post in rear of the center of their respective platoons. At the conclusion of the firing, they resume their posts in line.

On other occasions, when firing in close order is necessary, it is executed by platoons or other subdivisions under instructions from the captain.

195. *To form the company.* (To form a company quickly, silently and correctly is a real test of its discipline and training.)

The first sergeant takes position six paces in front of the point where the center of the company is to be, faces it and commands: FALL IN.

The right guide of the first platoon has an important position. In fact, he is the key in forming the company in line. Unless he takes his proper position the formation will be ragged. He places himself, facing to the front, where the right of the

platoon is to rest, and at such point that the center of the company or the leading platoon will be six paces from and opposite the first sergeant; right guides of other platoons place themselves successively at prescribed interval or distance from the right guide of the first platoon; platoon sergeants take post three paces in front of the point where the center of their platoons will be; the platoon forms in the proper places, superintended by the platoon sergeants and guides. Remember that the company can be formed in line or in column of platoons. The explanation given in this paragraph is applicable in either case.

The platoon sergeants then command REPORT. Remaining in position at the order, the squad leaders, in succession from the right in each platoon, salute and report "All present, or private (s) ——— absent." The platoon sergeants do not return the salutes of the squad leaders; they then command: 1. *Inspection*, 2. ARMS, 3. *Order*, 4. ARMS, face about, and at the command REPORT, given by the first sergeants and beginning with the first platoon, successively salute and report: ("1st, 2nd, etc.) Platoon, present or accounted for," or the number of unauthorized absentees. The first sergeant returns the salutes of the platoon sergeants.

All platoons and the headquarters detachment having reported, the first sergeant commands POSTS, and the platoon sergeants take posts. The first sergeant then faces about, salutes the captain and reports, "Sir, all present or accounted for," or "Sir, ——— men are absent" and without command takes his post.

If the platoon cannot be formed by squads, the platoon sergeant commands: 1. *Inspection*, 2. ARMS, 3. *Right shoulder*, 4. ARMS, and calls the roll. Each man as his name is called answers "here" and executes order arms. The platoon sergeant then effects the division into squads and reports the platoon as prescribed above.

The captain places himself 12 paces in front of the center of, and facing the company, or the leading platoon in time to receive the report of the first sergeant, whose salute he returns.

The platoon leaders take their posts immediately after the first sergeant has reported.

The non-commissioned officer or private in charge of the company headquarters detachment forms the detachment and reports as prescribed for the platoon sergeants.

The company, not under arms, is formed in like manner, omitting reference to arms. It is a common error to form a company in a very unmilitary manner; guides fail to take their posts promptly and accurately; the men fail to come to a rigid position of attention and bring up their arms at the command FALL IN; and the file closers add to the confusion by giving too many corrections.

One should remember that it is during the forming of the company that an inspector gets his first impressions of it. Therefore, if for no other reason, the formation should be as prescribed.

In instruction in forming the company it should be noted that the wording of the reports of the squad leaders, platoon sergeants, and first sergeant are specifically prescribed; both when there are no absentees and when there are. In making these reports the forms should be strictly adhered to.

196. *To dismiss the company.* (Just before dismissing the company it is a good plan to have a few well-executed movements in the manual of arms.)

Being in line or close column at a halt, the captain directs the first sergeant: "Dismiss the company." The officers fall out, the first sergeant moves six paces in front of the center of the company or the leading platoon, salutes, faces toward the company and commands: 1. *Inspection*, 2. ARMS, 3. *Port*, 4. ARMS, 5. DISMISSED.

The captain returns the salute of the first sergeant.

Dismissal may also take place by directions to the platoon leaders. The captain commands: "*Dismiss your platoons.*" Each platoon is then dismissed as prescribed for the company, the platoon sergeant performing the duties described for the first sergeant. The headquarters detachment is dismissed by its leader.

If dismissed by platoons it should be noted that the post of the platoon leader is three paces in front of the center of his platoon from which position he often commands, "dismiss the platoon." This is wrong. At the company commander's command, "dismiss your platoons," he should salute the company commander, then post himself six paces in front of the center of his platoon, and facing it, direct the platoon sergeant, "dismiss the platoon." The platoon sergeant takes post three paces in front of the center of the platoon and salutes the platoon leader, who returns his salute. The platoon sergeant then faces about and commands: 1. *Inspection*, 2. ARMS, 3. *Port*, 4. ARMS, 5. DISMISSED, this in view of the fact that the platoons should be dismissed as laid down for the company.

There is often a general tendency for first sergeants and platoon sergeants to dismiss their units from the right flank instead of taking their proper post.

Notice that there are two correct ways of dismissing a company. Captains often think their duties are over when they say to the first sergeant, "dismiss the company." Such is not the case. Each captain and each platoon leader should see that his company or platoon is dismissed in a military manner as prescribed in the regulations; otherwise the benefits of the drill may be lost by a let down in discipline the last moment.

197. After a movement is completed or after the company has been formed in line it is often out of dress or not on a straight line, one or more platoons are ahead or behind the line. The correcting of this condition or the dressing of a company in line is called "rectifying the alignment."

198. *To rectify the alignment.* Being in line at a halt, to align the company, the captain commands: 1. *Center (right or left)*, 2. DRESS.

The platoon leaders dress their platoons successively toward the center (right or left) guide of the company, each dressing as soon as the platoon leader next toward the indicated guide commands: FRONT. The platoon leaders of the two center platoons (if the dress is center) dress without waiting for each other.

Example No. 1. A company is in line and the captain commands: 1. *Right*, 2. DRESS.

The platoon leader of the right platoon commands 1. *Right*, 2. DRESS and his men execute the movement at his command. The left guide comes to right shoulder arms and steps up on the new line at the second command as explained in the preceding lesson; at the captain's first command, all the other platoon leaders should caution their platoons to "stand fast." As soon as the right platoon is dressed its leader commands FRONT and takes his post. As soon as the right platoon is dressed and after the command FRONT has been given, the leader of the platoon next to it dresses his platoon to the right in a similar manner. After this platoon is dressed the next two platoons are successively dressed to the right in a similar manner.

Example No. 2. The company of four platoons is in line and the captain commands: 1. *Center*, 2. DRESS.

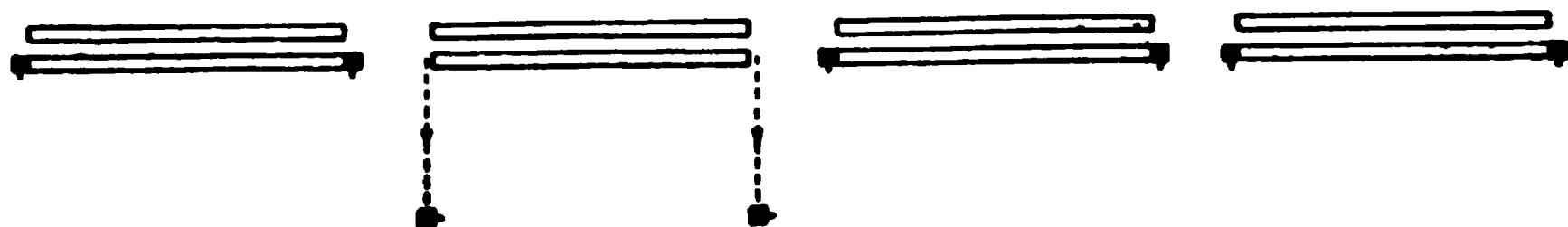
At the captain's command the leader of the right center and left center platoons each command: 1. *Left*, 2. DRESS and 1. *Right*, 2. DRESS, respectively, and dress their platoons as described in Example No. 1, except that the right guide of the right center platoon and the left guide of the left center platoon come to right shoulder arms and step up on the line as previously explained.

As soon as the leader of the right center platoon commands FRONT, the right platoon is dressed to the left by its leader. Correspondingly, as soon as the platoon leader of the left center platoon commands FRONT, the left platoon is dressed to the right by its leader, the guide away from the point of dress, remaining at right shoulder arms in each case until the command FRONT is given.

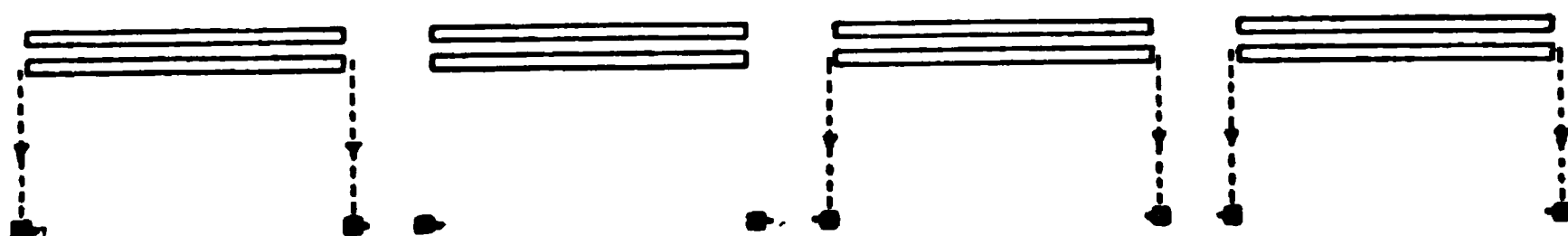
199. *A new alignment.* Sometimes the line is so bad that it cannot be quickly corrected by dressing the company, or the line will be at an angle to the direction in which the captain wishes his men to face. In such cases the captain decides to establish a new line upon which he will dress his company.

To give the company a new alignment the captain commands: 1. *Guides center (right or left), platoon on the line*, 2. *Guides on the line*, 3. *Center (right or left)*, 4. *DRESS*, 5. *Guides*, 6. *POSTS*.

Being in line at a halt, to align a company.



1. *Guides center platoon on the line*



2. *Guides on line.*

PLATE 219.

At the first command, the designated guides place themselves on the line facing the center (right or left). The captain establishes them in the desired direction.

At the second command (*guides on the line*), the guides of the other platoons take posts, facing the center (right or left) so as to prolong the line.

At the command *DRESS* each platoon leader dresses his platoon to the flank toward which the guides of his platoon face.

At the command *POSTS*, given when all platoons have completed the dress, the guides return to their posts.

Example No. 1. The company of four platoons is in line and the captain commands: 1. *Guides center platoon on the line*.

At this command the two guides of the right center platoon run out at trail arms to the place where the captain indicates the new line is to be, halt, come to the order arms and face to the left and establish the new line, as directed by the captain.

The captain then commands: *Guides on the line*.

The guides of the other platoons run out at this command and get on the new line: The guides of the right platoon facing to the left and those of the left platoon to the right. They must be careful to cover and to have proper intervals.

After all of the guides are on the line and covered the captain commands: 3. *Center*, 4. *DRESS*.

The men in ranks do not dress at the captain's command. Each platoon leader independent of the others, moves his platoon by the appropriate commands to its place on the line, halts it and then commands: 1. *Right (left)*, 2. *DRESS*, 3. *FRONT*.

The right and right center platoons are dressed to the left and the left center and left platoons to the right, all independently of each other and at the same time. When the last platoon leader has given the command *FRONT* the captain commands: 5. *Guides*, 6. *POSTS*.

In case the captain's command had been: 1. *Guides right platoon on the line*—the guides of this platoon would have run out, faced to the right and established the new line. All the other guides upon reaching the line should also face to the right. In this case the captain should cause each platoon to dress to the right and correspondingly to the left in case the guides of the left platoon establish the new line.

200. To rectify the column. Sometimes the platoon guides of a company in column of platoons do not cover in file or lose distance and it is necessary to correct the formation. This is known as "rectifying the column."

Being in column of platoons or in close column, at a halt, if the guides do not cover or have not their proper distances, and it is desired to correct the formation, the captain commands: 1. *Right (left)*, 2. DRESS. The leader of the leading platoon dresses his platoon to the right and then commands FRONT.

Leaders of platoons in rear of the leading platoon place their right guides so as to cover at the proper distance; each platoon leader aligns his platoon to the right and commands FRONT.

For example. Let us suppose the company is in column of platoons and the captain wishes to rectify the column on the right. He commands: 1. *Right*, 2. DRESS.

The leader of the first platoon after posting his right guide to conform to the wishes of the captain, commands: 1. *Right*, 2. DRESS, and adds FRONT after dressing his men. Remember that this is a column formation and his position while dressing the platoon is two paces from the right guide, facing down the line.

As soon as the platoon leader of the leading platoon has given the command: 1. *Right*, 2. DRESS, the leader of the next platoon posts his right guide so as to cover and at the correct distance behind the right guide of the leading platoon and then dresses his platoon to the right. As the company is not in line the guides away from the point of rest (in this case the left guides) do not come up to the right shoulder arms. As soon as the platoon is dressed, its leader commands FRONT.

As soon as the right guide of the second platoon, counting from front to rear, is posted the leader of the next platoon posts his right guide and dresses his platoon as previously described.

As soon as the right guide of the 3rd platoon is posted (in position) the leader of the next platoon posts his right guide and dresses his platoon as just explained.

Cautions. Don't give 1. *Right or left*, 2. DRESS when your platoon is several paces in front of or behind or to the right or left of the line upon which you wish to dress it. To do so makes a ragged and unmilitary movement. It is better to give *at trail* and then the appropriate commands (use the half step) to get your platoon on or in rear of the new line. Then give the commands for dressing.

201. *On right (left) into line.* (This is a successive movement.)

Being in column of squads, the command is: 1. *On right (left) into line*, 2. MARCH, 3. *Company*, 4. HALT.

At the first command (on right into line), the leader of the leading platoon commands: Squads right. If at a halt, each platoon leader in rear commands: Forward. If marching they should caution "continue the march." At the second command (MARCH), the leading platoon marches in line to the right; the platoons in rear continue to march to the front and form successively on the left, each when opposite its place, being marched in line to the right.

The fourth command (HALT) is given when the leading platoon has advanced the desired distance in the new direction; it is halted and dressed to the right by its leader, who commands: FRONT. The other platoons complete the movement, each being halted one pace in rear of the line established by the leading platoon, and then dressed to the right. If executed in double time, the leading platoon marches in double time until halted.

Detailed explanation. The company is in column of squads at a halt and the captain commands: "On right into line." At this command the leader of the leading platoon commands: Squads right. (If the captain's command is on left into line, the platoon leader's command is "squads left.") Each leader of the three platoons in rear commands: "Forward," if halted and cautions "continue the march" if marching.

After the command MARCH has been given and as soon as the leading platoon has advanced in the new direction as far as the captain wishes it to go, he commands: Company, whereupon the leader of this platoon commands: Platoon. The captain then commands: HALT and the leading platoon halts, but the left guide remains at right shoulder arms. The platoon commander places himself on the

right side of the right guide, directs the left guide where to stand in order to establish the line perpendicular to the old direction and commands: 1. *Right*, 2. DRESS.

Being in column of squads: 1. On right into line, 2. MARCH, 3. Company, 4. HALT.

Note:- Each platoon leader places himself so as to march beside the right guide after his platoon forms line, as shown in the third platoon. The leader of the 1st. Platoon has dressed his platoon and has taken his post. The leader of the 2nd Platoon is dressing his platoon.

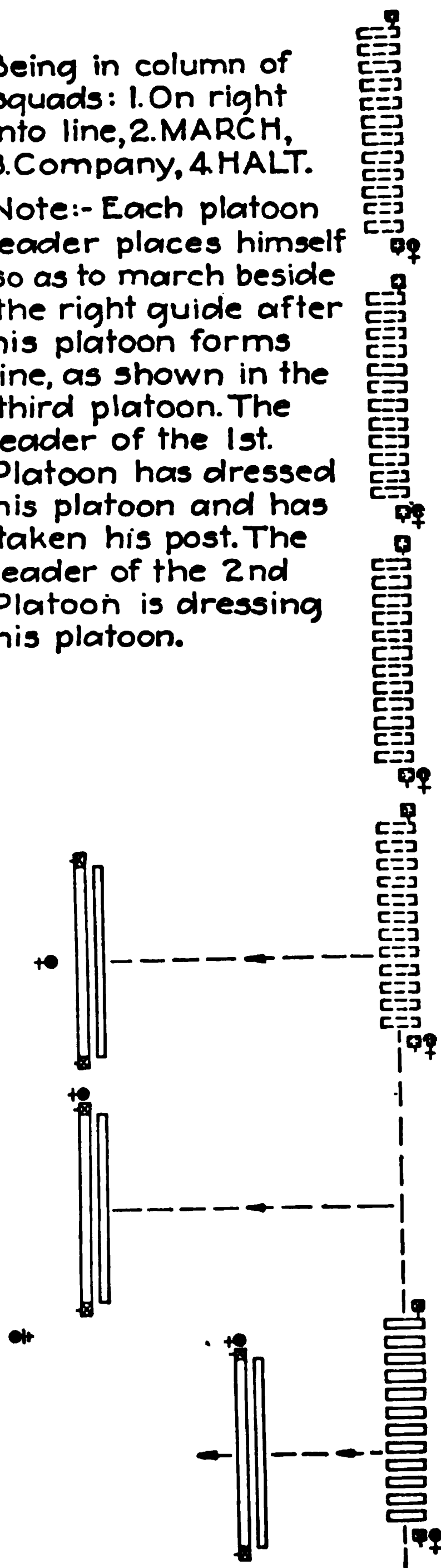


PLATE 220.

The platoon leader commands FRONT as soon as the dressing of his platoon is completed; the left guide then comes to the order arms, the platoon leader takes his post in front of his platoon.

Remember, while all this is going on, the other platoons are executing their parts of the movement. We left them marching forward. The leader of the platoon immediately behind the base (leading) platoon, commands: Squads right, in time to add MARCH, so that when his platoon forms into line and comes up abreast of the base platoon, his right guide will be five (5) paces from the left guide of that (base) platoon. To give the commands to accomplish this, the platoon leader himself should halt, when he has taken five paces beyond the left guide of the base platoon and command: "Squads right" and add MARCH as the front rank of the rear squad comes up abreast of him. Upon approaching the new line he commands: Platoon and adds HALT so that the platoon will halt one pace in rear of it (new line). The platoon leader then places himself at a point on the new line about $4\frac{1}{2}$ paces from the left guide of the base platoon, facing to the front. The left guide remains at right shoulder arms and dresses on his platoon leader and the base platoon, thus establishing the line. The platoon leader then commands: 1. *Right*, 2. DRESS, dresses his platoon and commands: FRONT.

The other platoons are successively marched to their places on the new line, halted and dressed to the right in exactly the same manner and by the same commands as given for the platoon immediately in rear of the leading platoon.

Cautions. Remember that this movement when executed, in double time, is an exception to the general rule that in successive movements the leading unit remains at or takes up quick time. In this movement, when it is executed at a double time, the leading unit must get out of the way of the platoons in the rear that move forward at a double time; therefore it (leading platoon) must take up or continue at double time until halted.

Each platoon leader places himself so as to march beside the right guide, after his platoon forms line (right after he commands: 1. *Squads right (left)*, 2. MARCH).

The platoon leaders of all platoons should announce the guide after their platoons have formed line to the right or left in preparation to marching onto the new line.

202. Being in column of platoons, the command is: 1. *On right (left) into line*, 2. MARCH, 3. *Company*, 4. HALT. At the first command, the leader of the leading platoon commands: "Right turn." If at a halt, each platoon leader in rear commands, "forward" and if marching cautions, "continue the march." Each platoon leader in rear of the leading platoon gives the command: 1. *Right turn*, and adds MARCH when his platoon arrives opposite the right of its place in line. The fourth command is given and the movement completed as previously explained.

Example. Let us assume that the company is in column of platoons and the captain commands: 1. *On right into line*. The leader of the leading platoon commands: 1. *Right turn*. The leaders of the other platoons command "forward" if at a halt and caution "continue the march" if marching. The captain, after hearing all of his platoon leaders give the correct commands as described above, commands: MARCH. As soon as the leading platoon has executed right turn, its leader commands: 1. *Forward*, 2. MARCH, announces the guide and takes his post on the right of the right guide. The leading platoon, having advanced the desired distance in the new direction, the captain commands: 3. *Company*, whereupon the leader of the leading platoon commands: "Platoon." The captain then commands 4. HALT, and the platoon halts, the left guide remaining at right shoulder arms and taking post as directed by the platoon leader, who then commands: 1. *Right*, 2. DRESS, and after dressing his platoon, adds, 3. FRONT and takes his post. The left guide resumes the position of order arms at the command FRONT.

Being in column of platoons:
 1. On right into line, 2. MARCH, 3. Company, 4. HALT.
 Note: Each platoon leader places himself so as to march beside the right guide after his platoon changes direction to the right. This is shown in the third platoon. The platoon leader of the first platoon has dressed his platoon and taken his post. The platoon leader of the second platoon is dressing his platoon. The fourth platoon is just ready to change direction to the right.

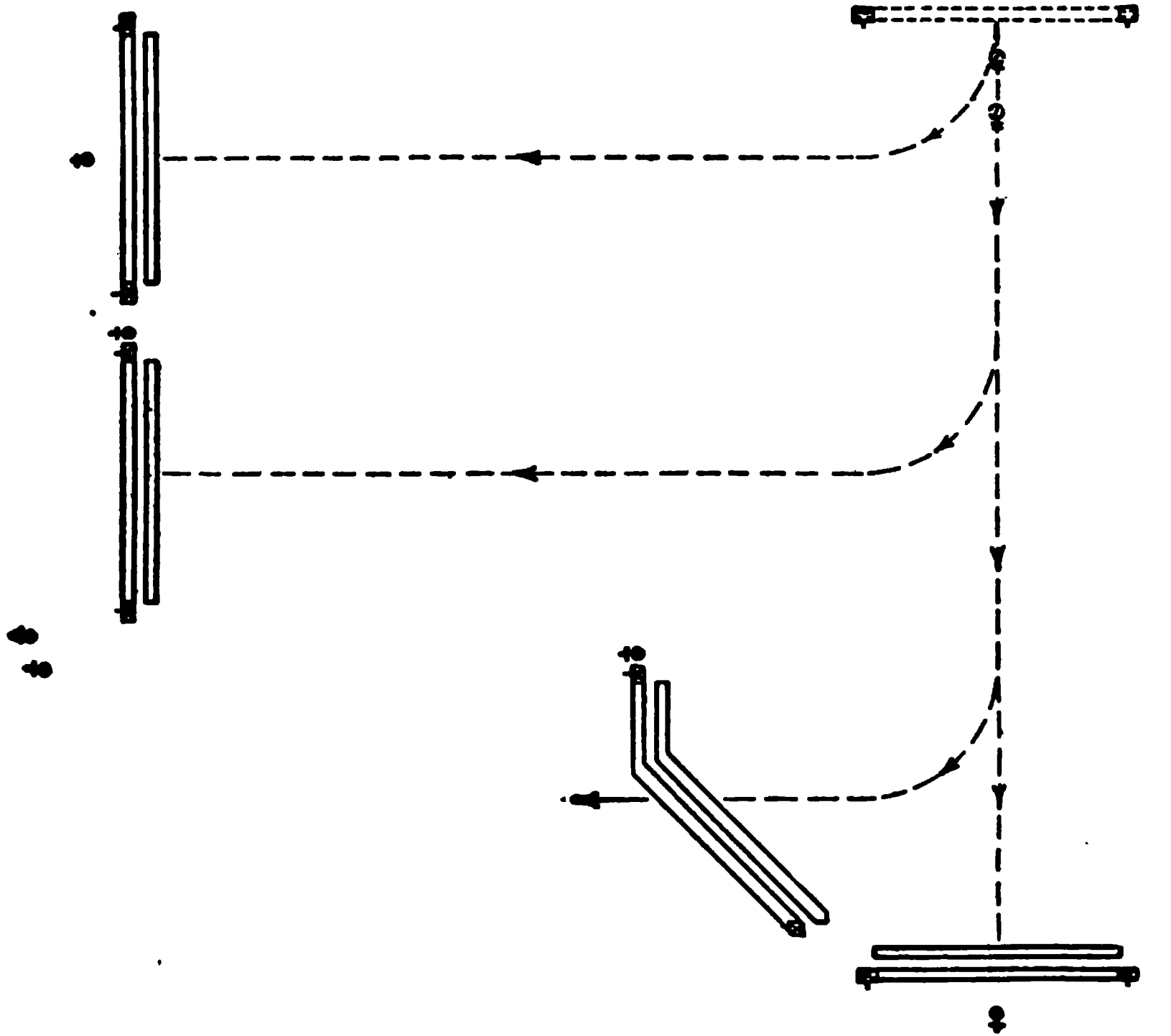


PLATE 221.

As the platoon immediately in rear of the leading platoon reaches a position in rear of the left of the leading platoon, its leader commands: 1. *Right turn*, and adds MARCH at a time so that his right guide will, when he changes direction, have five paces interval from the left guide of the leading platoon. The best way to make certain that the command MARCH is given at the proper time is to simply observe when the right guide clears the left of the leading platoon and on the fourth step, give the command MARCH, having previously given the command: "Right turn." The leader of this platoon adds: 1. *Forward*, 2. MARCH when the platoon has completed the right turn and takes his post on the right of the right guide. Upon nearing the new line he commands: Platoon and adds HALT so that his platoon will halt one pace in rear of the line. The platoon leader then gets on the new line (at the proper interval from the left guide of the base platoon). The left guide, who has remained at right shoulder arms, dresses on the platoon leader and the base platoon. When this is completed, the platoon leader commands: 1. *Right*, 2. DRESS and after his platoon has dressed, adds FRONT and takes his post. The left guide comes to the order arms at the command FRONT.

As this is a successive movement, the next platoon is conducted upon the left of the line, halted and dressed to the right in the same manner and by the same commands as described above.

The last platoon is in like manner brought up on the left of the line, halted and dressed to the right.

The platoon leaders of all platoons should announce the guide after their platoons have formed line to the right or left in preparation to marching onto the new line.

203. *To form column of platoons successively to the right or left.*

Being in column of squads the command is: 1. *Column of platoons, first (fourth) platoon, squads right (left)*, 2. MARCH.

The command "column of platoons" indicates the formation the company will be in when the movement is completed.

At the first command: 1. *Column of platoons, first platoon, squads right*, the leader of the leading platoon commands: "Squads right"; the leaders of the rear platoons, if marching caution "continue the march" and if halted, command "forward." At the captain's command MARCH the leading platoon executes squads right and marches in the new direction to the right. (The guide is to the right unless otherwise announced.) The rear platoons march forward in column of squads, each platoon leader commanding: "Squads right" in time to add MARCH so that his platoon will follow the preceding platoon in such a manner that his right guide will follow in the trace of the right guide of the leading platoon. This requires very accurate timing of the command MARCH.

Being in column of squads, to form column of platoons successively to the right:-

1. *Column of platoons, First Platoon, squads right*, 2. MARCH. The captain is not shown in the original position. He is 8 paces from the center of the column of squads on the side of the guides.

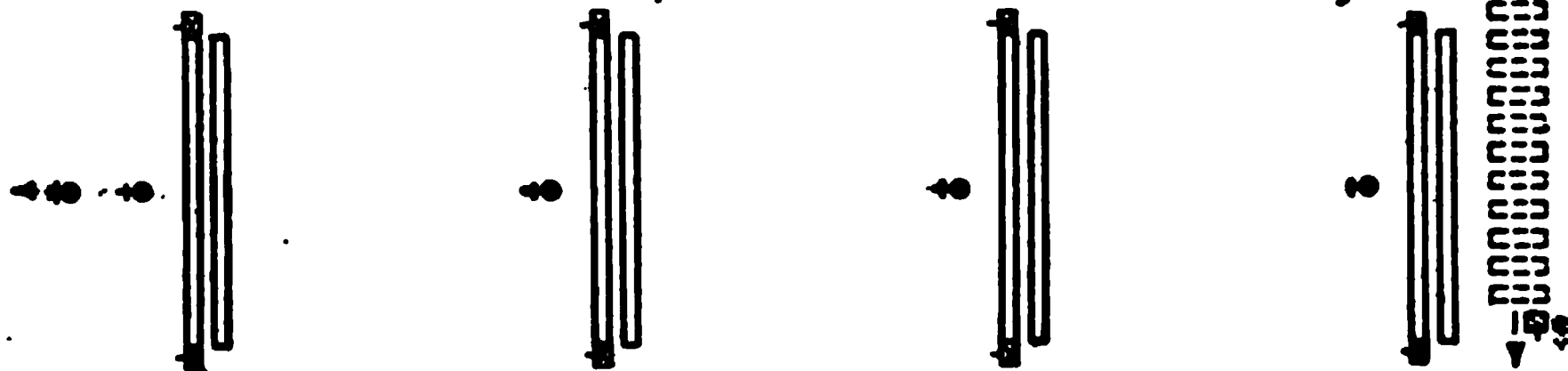


PLATE 222.

Caution. In order to figure out your commands for and to understand this movement it is well to get a mental picture of the formation your company is in, namely, *column of squads* and the desired formation, *column of platoons to the right (left)*. With these two formations clearly in mind, you should have no trouble with this movement or the commands.

204. *Front into line.* (This is a successive movement.)

Being in column of squads, the command is: 1. *Right (left) front into line*, 2. MARCH.

Being in column of squads:-

1. *Right front into line*, 2. MARCH.

Note: Each platoon leader halts when opposite or at the point where the left of his platoon is to rest, as is shown in the 3rd Platoon. The leader of the 1st Platoon has dressed his platoon and taken his post. The leader of the 2nd Platoon is dressing his platoon.

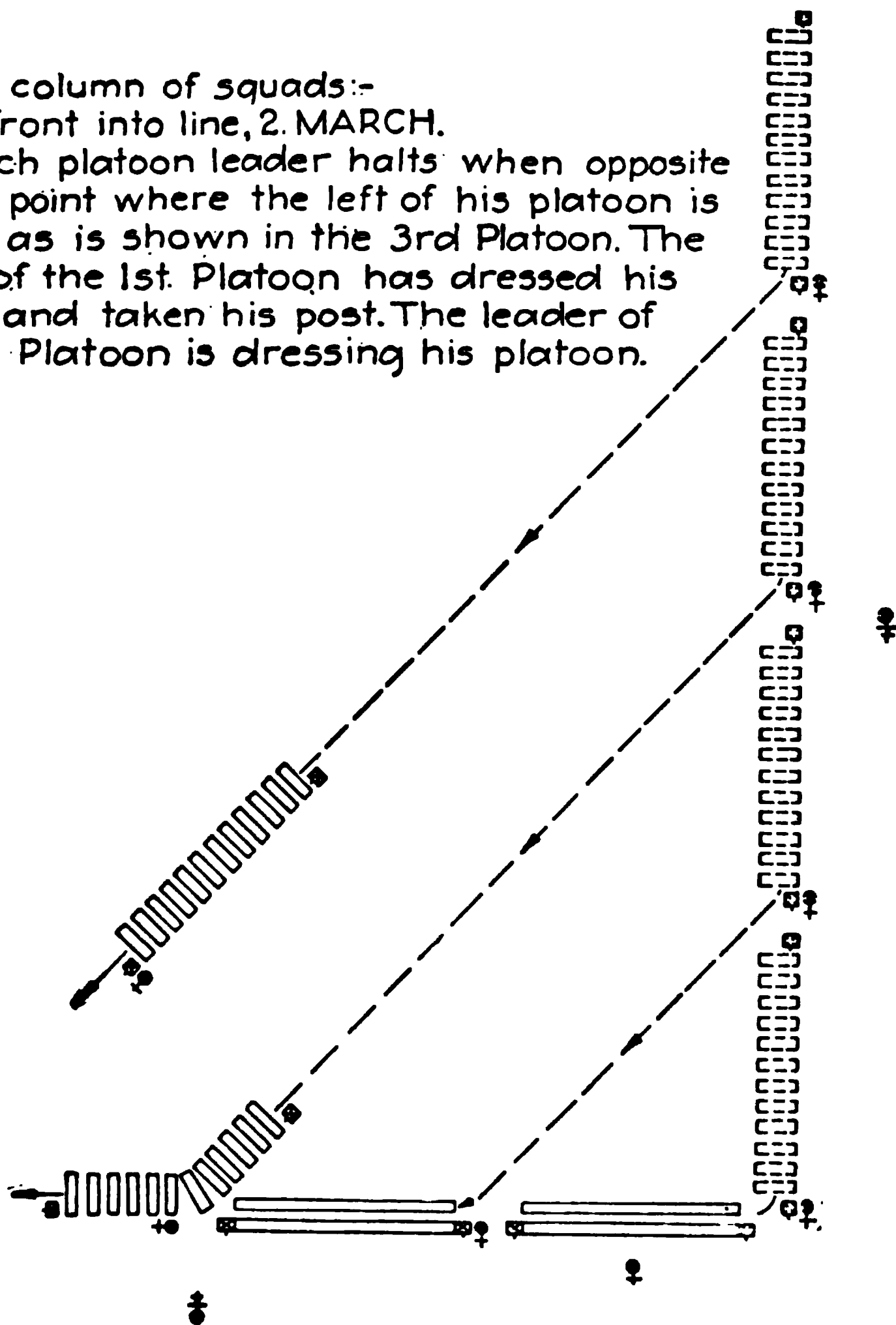


PLATE 223.

At the first command, "right front into line," the leader of the leading platoon, whether marching or halted, commands: "Column right," the leaders of the platoons in rear command: "Column half right." At the command MARCH, the leading platoon executes column right, and before the change of direction is completed, its leader gives the command: 1. *Squads left*, and adds MARCH as the last squad completes the change of direction. Immediately thereafter he commands "platoon," adding HALT when the squads have united in line. He (platoon leader) then takes position on the left of the left guide, directs his right guide (who has remained at right shoulder arms) where to stand and commands: 1. *Left*, 2.

DRESS and then FRONT and takes his post. The right guide (guide away from point of rest) comes to the order arms at the command FRONT. In executing this movement the leader of the leading platoon must be careful not to permit his platoon to go too far to the right or gain any distance to the front after he has given the command: "Squads left."

While the leading platoon is executing the movement described above, the rear platoons are being conducted by the most direct routes to their positions as follows:

Each platoon leader conducts his platoon to the rear of the right of the preceding platoon, thence to the right (executes column right or column half right), parallel to and one pace in rear of the new line. The platoon leader then takes four paces in the new direction so as to make certain of the correct interval, halts and commands. "Squads left," adding MARCH as the front rank of the rear squad comes up abreast of him. The platoon leader instantly commands: "Platoon," adding HALT as soon as the squads unite in line. The platoon leader then places himself in prolongation of and $4\frac{1}{2}$ paces from the right flank of the front rank of the base platoon. All come to the order upon halting except the right guide who places himself on a line with the platoon leader and the base platoon; whereupon the platoon leader commands: 1. *Left*, 2. DRESS and after dressing the platoon he adds FRONT at which command the right guide comes to the order arms.

205. We will now explain the same movement executed from column of platoons.

The company being in column of platoons the command is: 1. *Right front into line*, 2. MARCH.

Being in column of platoons:-

1. *Right front into line*, 2. MARCH.

Note: Each platoon leader halts when opposite or at the point where the left of his platoon is to rest, as shown in the 3rd Platoon. The platoon leader of the 1st Platoon has dressed his platoon and taken his post. The platoon leader of the 2nd Platoon is dressing his platoon.

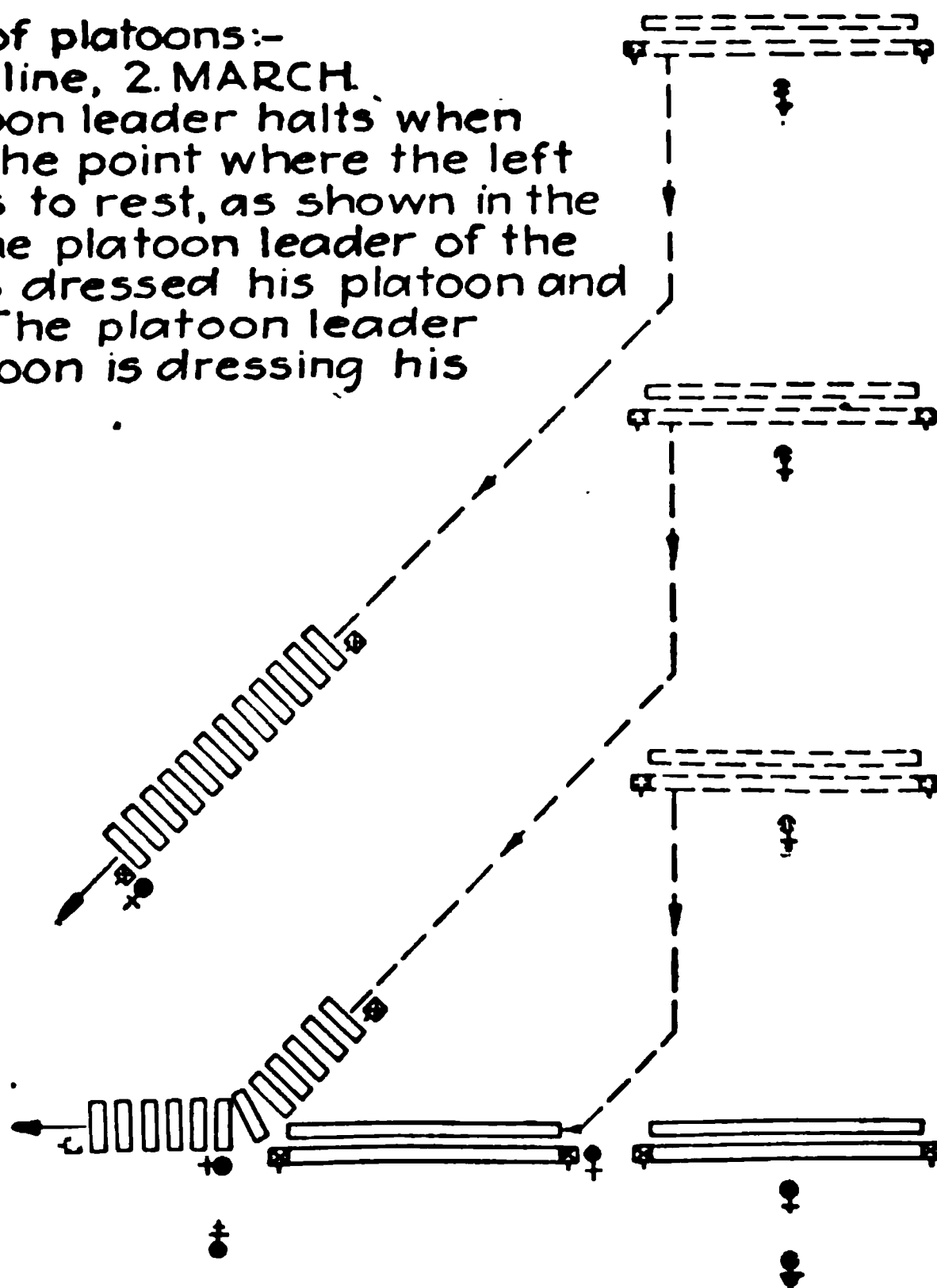


PLATE 224.

Example No. 1. Let us assume the company is marching. At the captain's first command: "Right front into line," the leader of the leading platoon commands: "Platoon" and the leaders of the rear platoons command either "squads right

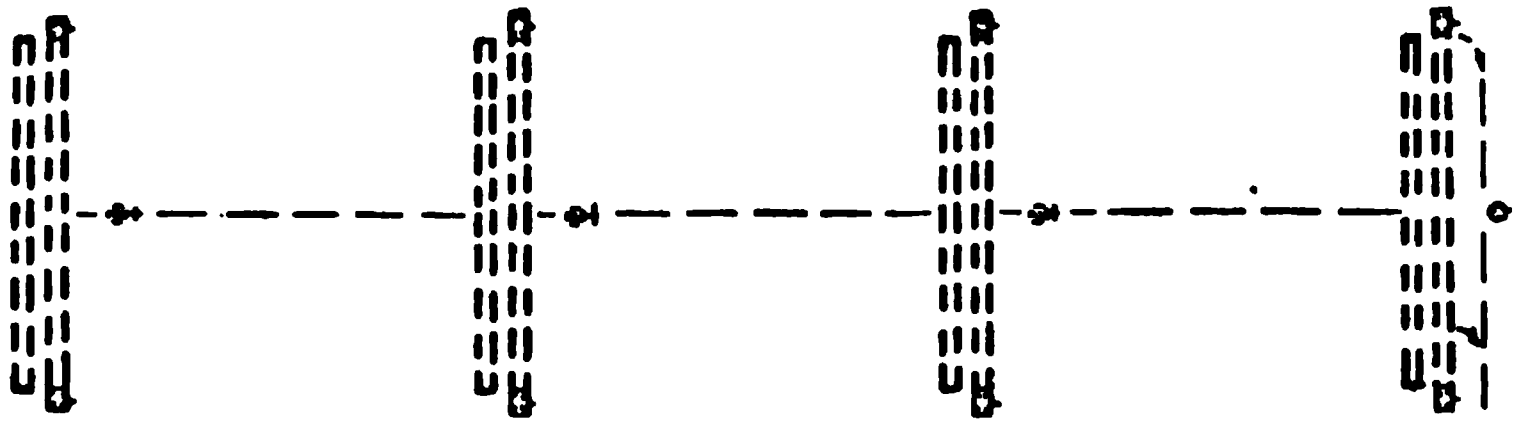
column left " or " right by squads " (we recommend the latter). At the captain's command MARCH the leading platoon halts and is dressed to the left as described when this movement is executed from column of squads. Note that the first platoon halts at the captain's command MARCH. At the captain's command (MARCH) the rear platoons are marched to their places one pace in rear of the new line, halted and dressed to the left as described in the preceding paragraph. This is a very difficult movement for the leading platoon to execute as some of its men usually fail to halt at the command MARCH, which the instructor must remember to give on either one foot or the other. The leading platoon, during recruit drill, should be cautioned by its platoon leader and file closers to halt at the command MARCH. However, plenty of practice and training should soon make such cautions unnecessary.

Example No. 2. Let us now assume the company is in column of platoons at a halt and the command to be: 1. *Right front into line*, 2. MARCH.

At the captain's first command (right front into line) the leader of the first platoon should caution it to stand fast; the leaders of the rear platoons command either "squads right, column left" or "right by squads" (we recommend the latter). At the captain's command MARCH the leader of the leading platoon dresses it to the left, if the line is unsatisfactory; the other platoons are marched to their new places on the line as described in the preceding paragraph.

Caution. Whether executed from "column of squads" or "column of platoons," each leader of the rear platoons halts when opposite or at the point where the left of his platoon is to rest.

Notice that when this movement is executed by the company, the leading platoon does not gain any distance to the front whereas when executed by a platoon in column of squads (School of the Platoon) the leading squad marches to the front until halted. By remembering this rule, the commands can easily be figured out in each case.



Being in column of platoons, to form column of squads successively to the right:-

1. Column of squads, First Platoon, squads right,
2. MARCH.

206. To form column of squads successively to the right or left.

Being in column of platoons, the command is: 1. *Column of squads, first (fourth) platoon, squads right (left)*, 2. MARCH.

Let us first analyze the command, which should be memorized, and then explain what each platoon leader does. If the student can visualize the formation the company is in, namely, "column of platoons" and then the desired formation, namely, "column of squads," he can check his command. The first part of the first command, "column of squads," indicates the desired formation; the next part of this command, "first platoon," indicates the base platoon, the one which will initiate the movement or lead the column of squads. The last part of the first command, "squads right," indicates the movement the designated platoon will execute. The command MARCH initiates the movement. Having correctly analyzed the commands, the only remaining part of the movement not indicated is the fact that the other platoons move forward in column of platoons and successively march in column of squads to the right on the same ground as the leading platoon.

Caution. As the leading platoon should lead the column of squads and therefore be designated in the first command, the drill-master must be careful not to command "first platoon" unless that platoon is leading the column of platoons. The numerical designation of platoons does not change and the fourth platoon may be the leading platoon.

Example. Let us assume the company is in column of platoons at a halt and the captain commands: 1. *Column of squads, first platoon, squads right*.

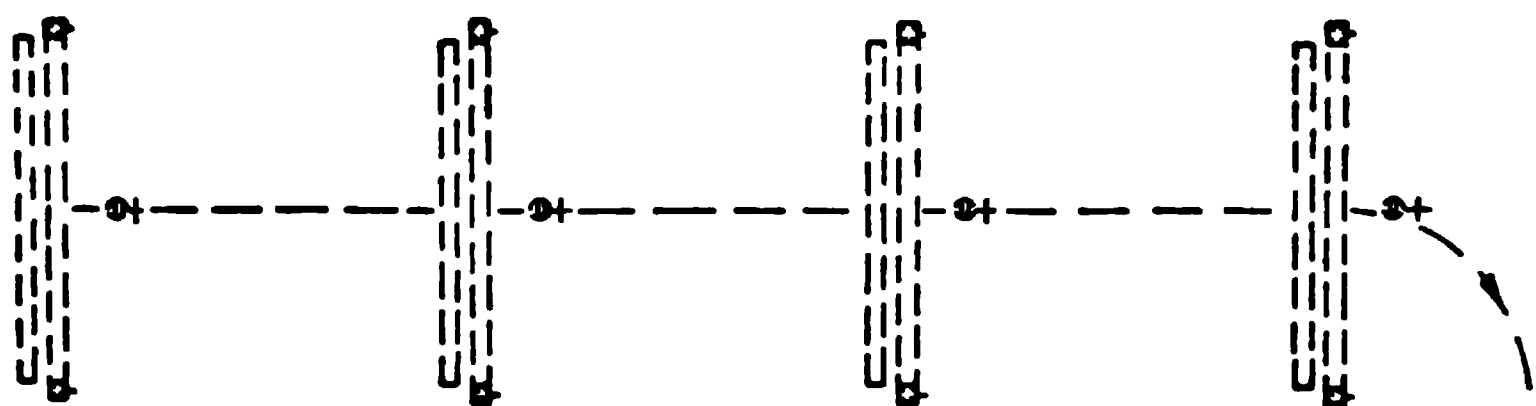
The commander of the first platoon should command: "Squads right."

The leaders of the rear platoons should command: "Forward."

Having heard the correct commands given by all his platoon leaders, the captain should command: 2. MARCH.

Whereupon the first platoon executes "squads right" and the rear platoons "forward march." Just before each rear platoon reaches the place where the first platoon executed squads right the platoon leader commands: "Squads right" and adds MARCH at such a time as to follow the preceding platoon in column of squads with 4.4 paces (distance) between guides.

PLATE 225.



Being in column of platoons, to change direction to the right :-
1 Column right, 2 MARCH,

To Change Direction.

207. Being in column of platoons or close column, the command is: 1. *Column right (left)*, 2. MARCH.

First, get clearly in mind the formation your company is in, then the one desired and you will have little trouble about giving the correct commands. This movement can be best explained by an example.

Let us assume that the company is in column of platoons at a halt and the captain's command is: 1. *Column right*. The platoon leader of the leading platoon should command: "Right turn," and the platoon leaders of the rear platoons should command: "Forward."

The captain then commands MARCH and each platoon obeys the preparatory command of its leader.

As soon as the leading platoon has completed the turn its leader and not the captain of the company, commands: 1. *Forward*, 2. MARCH.

The rear platoons march squarely up to the turning point. Each platoon leader commands: "Right turn" and adds MARCH at exactly the right time to have his right guide cover the right guide of the preceding platoon when the change of direction is completed.

When the company is in "close column" the movement is executed as described above, but the leaders of the rear platoons must be on the alert to give their commands at exactly the right time or the guides cannot cover.

The common error in executing this movement is for the rear guides to lose distances. Remember that the leading guide is charged with step and direction whereas the rear guides are charged with step and distance. Therefore it is the guides' duty to look after the correct distance and not the duty of the platoon leader except in so far as he has command over and is responsible for the entire platoon.

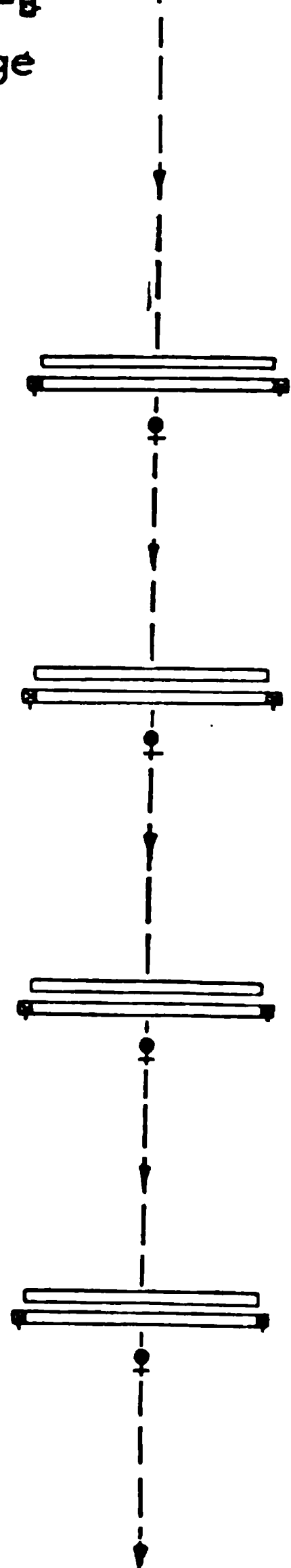


PLATE 226.

208. Being in line of platoons or close line, the command for changing direction is: 1. *Company right (left)*, 2. MARCH, 3. *Company*, 4. HALT. (This is a successive movement.)

Here again the student should get clearly in mind the two formations—the one we have and the one we want. Most students have great difficulty with movements involving “line of platoon” and “close line” formations.

It is for this reason that this movement is shown by plates when the company is in both of these formations. The student should remember that it is a line formation whether the company is in “line of platoons” or “close line.”

In this movement, the commands and manner of execution are the same whether in line of platoons or in close line. Therefore the movement will be explained for the company in close line only.

Let us assume that the company is marching in close line and the captain commands: 1. *Company right*.

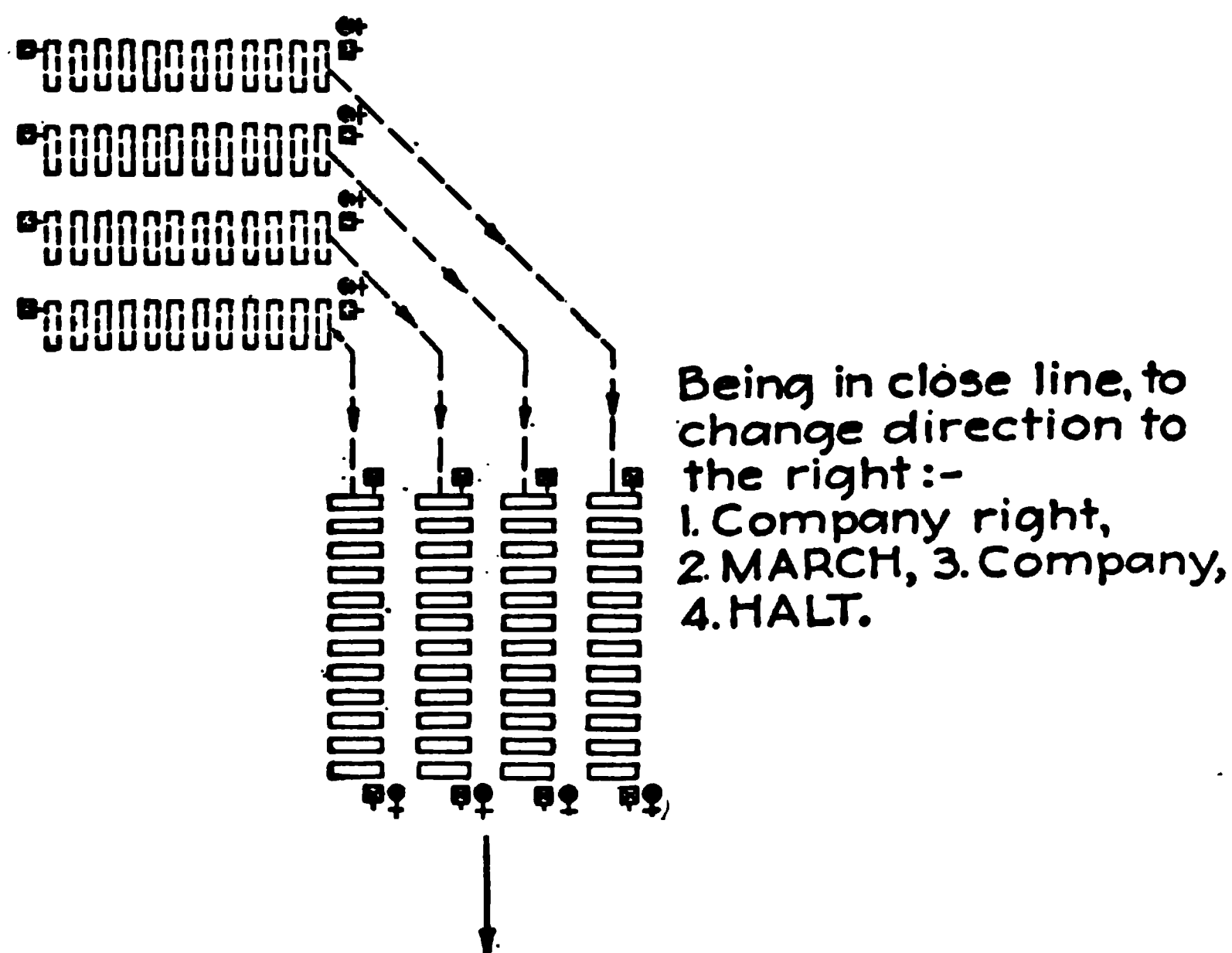


PLATE 227.

The leader of the right platoon should command: 1. *Column right*, and the leaders of the other platoons command: 1. *Column half right*.

The captain having heard his platoon leaders give the correct commands, adds MARCH, whereupon each platoon executes the preparatory command of its leader. The leaders of the platoons on the left of the right platoon conduct their platoons by the shortest line (execute a second column half right) to their places abreast of the right platoon.

When the right platoon has advanced the desired distance in the new direction, the captain commands: 1. *Company*, whereupon the leader of the right platoon commands: “Platoon” and the other platoon leaders should caution, “continue the march.”

The captain, after making certain that the leader of the right platoon gave the correct command, should give: HALT, being certain to give it so that the base platoon can execute the halt correctly. It is an excellent rule for the captain to be in step with the base platoon.

The other platoons are lead up on the line as previously explained, each leader halting his platoon so as to be on a line with the leading squad of the base platoon and at the correct interval from the next platoon on his right.

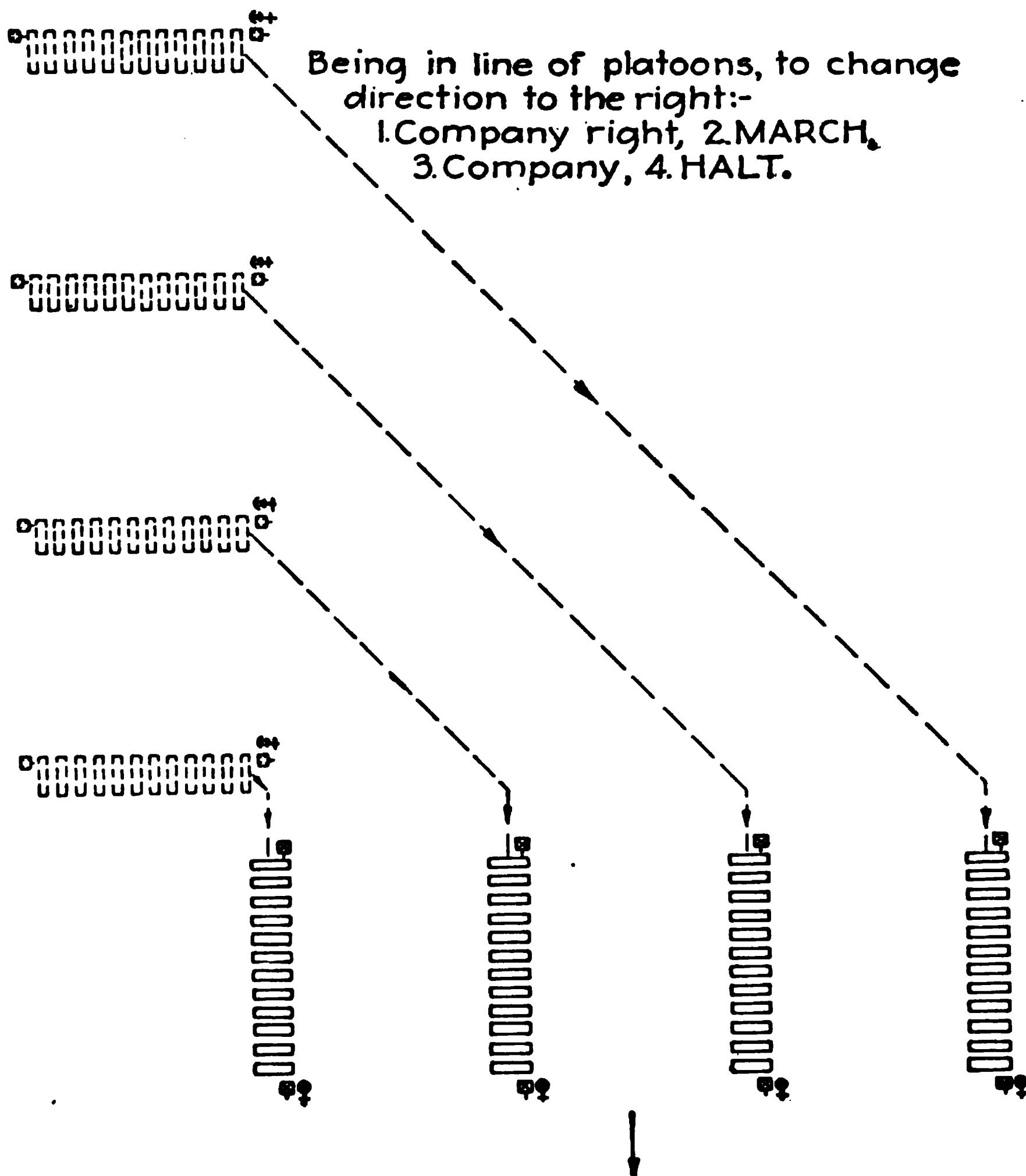


PLATE 228.

As this is a successive movement, the base platoon should march at quick time when the movement is executed at a double time. For example, if the company is in close line at a halt and the captain should command, 1. *Company right, double time*, the leader of the right platoon should command: "Column right" and caution: "Quick time." The leaders of the other platoons should command: "Column half right. double time." The movement is executed as described in the preceding paragraph, except that the captain does not command 3. *Company*, 4. HALT (unless he wishes to halt the base platoon) and each platoon leader upon arriving abreast of and at the correct interval from the base platoon commands: 1. *Quick time*, 2. MARCH.

Caution. As line of platoons and close line are both line formations the guide is center unless otherwise announced. Therefore when executing company left, it is a good plan to announce, "guide left," as soon as the movement is completed. During the execution of the movement the guide is to the left because the left platoon is the base platoon.

209. Being in column of squads, the company changes direction by the same commands and in the same manner as prescribed for the platoon.

Mass Formations.

210. Being in line of platoons the command is: 1. *Close on first (fourth) platoon*, 2. MARCH, 3. *Company*, 4. HALT.

Beginners appear to have difficulty in understanding this movement which should therefore be studied with unusual care.

Get clearly in mind the two formations, the one you have and the one you want, and the movement is not so hard to understand. By analyzing the command, we see that the captain gives the command for halting, therefore you can assume that the base platoon at the command MARCH moves out or continues to march if already marching. Remember that the purpose of the movement is to go from "line

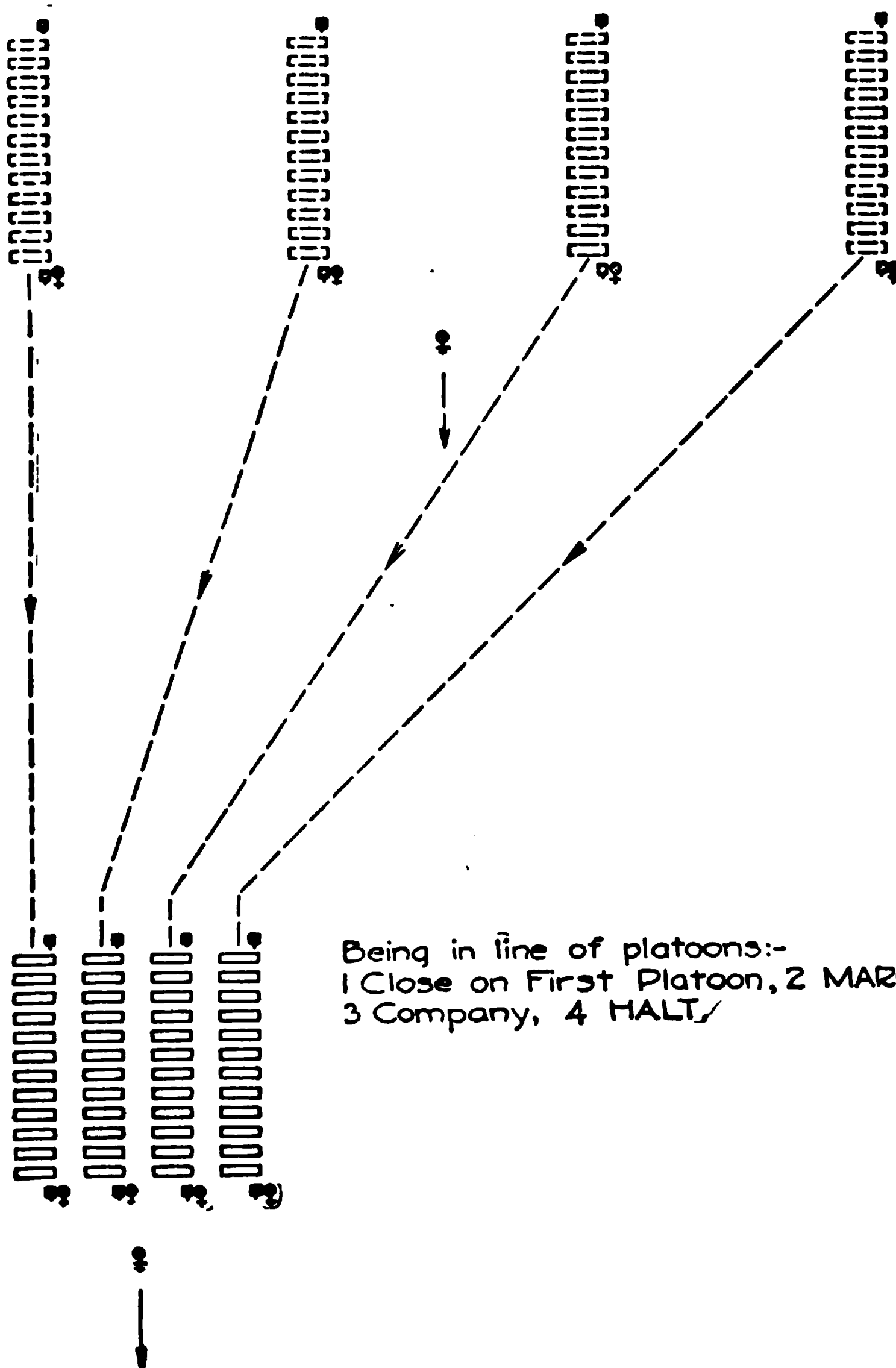


PLATE 229.

of platoons " to " close line " (mass formation). Let us describe the movement in detail in connection with the commands.

The captain's first command is: 1. *Close on first platoon.*

At this command the leader of the first platoon commands: 1. *Forward* if at a halt and cautions, "continue the march," if marching. If the captain indicates a new direction he (platoon leader) gives the necessary commands so that his platoon will march in that direction. Remember that the first platoon may be on the right or left of the company and that the numerical designations of the platoons do not change.

The other platoon leaders (at this first command) give the necessary commands to conduct their platoons toward the left of the base platoon so as to have the correct interval (seven paces) when they arrive abreast of it. When the base platoon moves straight to the front, as shown in the plate, the first command of the other platoon leaders is "column half right."

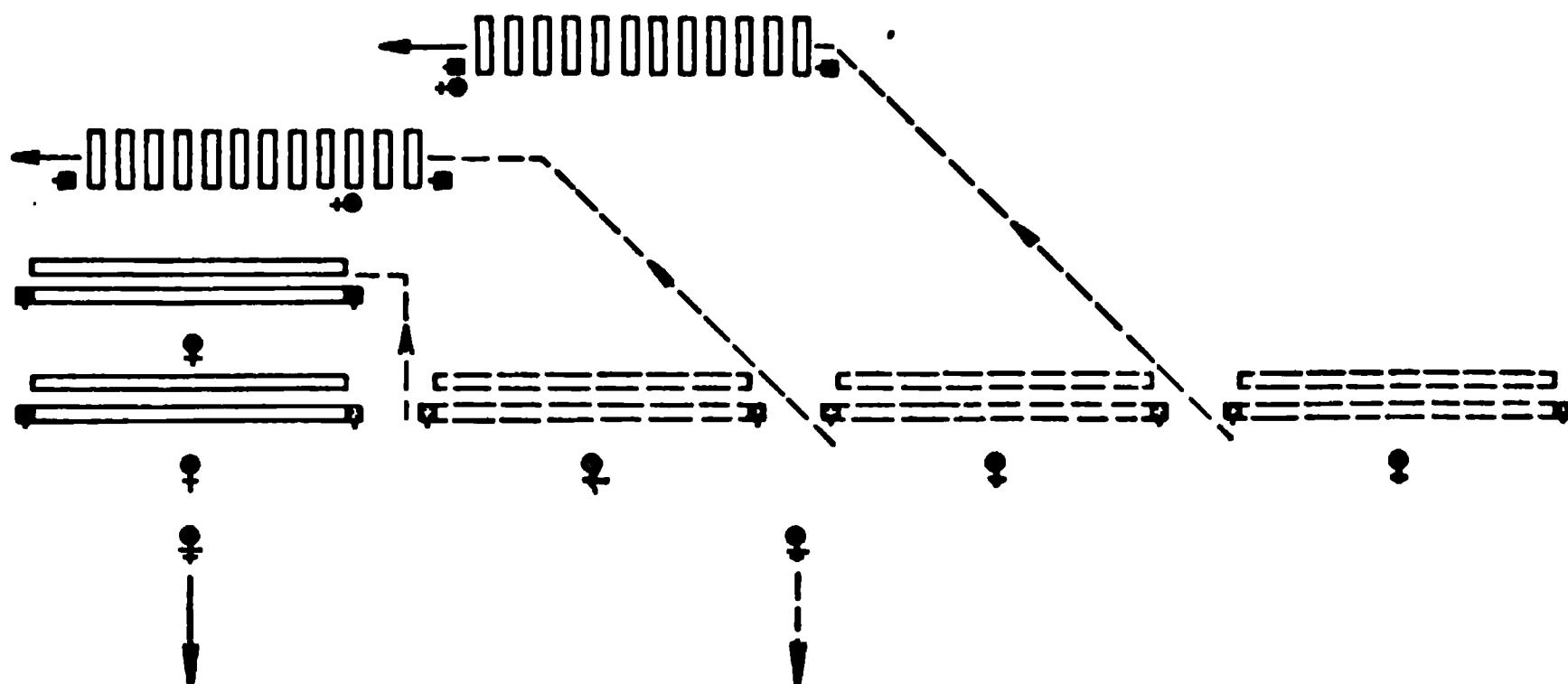
Having assured himself that all his platoon leaders have given the correct commands, the captain commands: 2. MARCH, whereupon the movement commences.

The base (first) platoon having advanced the desired distance the captain commands: 3. *Company*. The platoon leader (1st platoon) then commands: "Platoon" and at this time it is well for the other platoon leaders to caution, "continue the march."

The captain then commands, 4. HALT and the first platoon halts. The other platoons are conducted successively by their leaders up on the line with and abreast of the base platoon and halted so as to have seven paces interval from the next platoon on the right. Each platoon leader is responsible that his platoon has the correct interval of seven paces.

As this is a successive movement, the base platoon marches in quick time when the movement is executed in double time. The other platoons take up the double time at the command MARCH. The captain does not necessarily halt the base platoon as the other platoons take up the quick time when they come abreast of it.

211. Being in line the command for a mass formation is: 1. *Close on first (fourth) platoon*, 2. MARCH.



Being in line:- 1. Close on First Platoon, 2. MARCH.

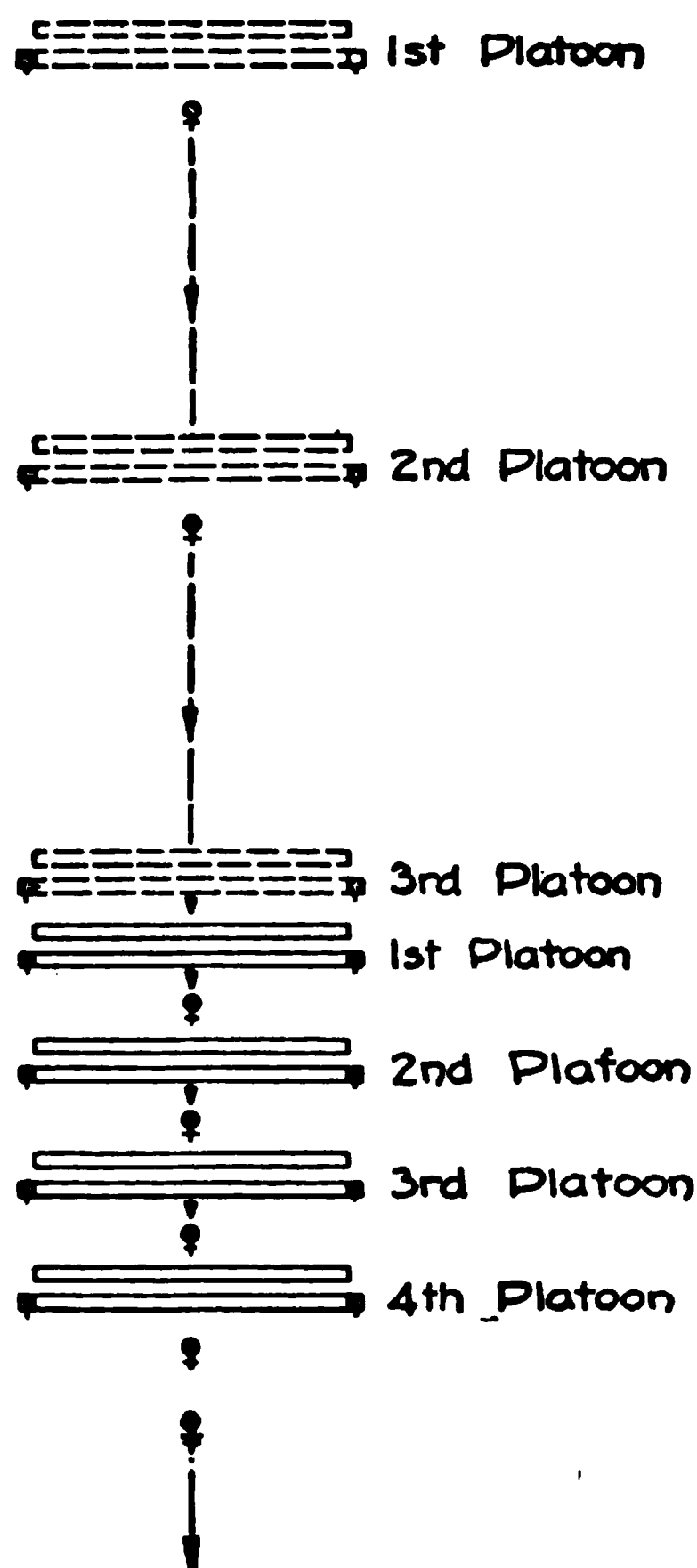
Note:- In close column formed from line on the right platoon, the left guides cover. In order to be certain that the left guides cover, the platoon leader should halt at the point where the left of his platoon is to rest. He remains in this position until his platoon forms in line to the left, when he takes his post.

Before attempting to give the commands for or explain this movement get clearly in mind the two formations, the one you have and the one you want.

We will assume that the company is in line. The captain commands: "Close on first platoon," at which command the platoon leader of the first platoon should caution "stand fast," if halted, and "platoon," if marching; the leaders of the other platoons give the necessary commands to move toward and to the rear of the first platoon so as to be in close column. We recommend that they give for their first command "squads right, column right," and "squads right, column half right," respectively.

Notice that as the first platoon may be either on the right or left, the platoon leaders must know where it is before they can give their commands. Notice who commands the first and fourth platoons when the drill commences.

The captain having heard each platoon leader give the correct preparatory command, adds MARCH. Whereupon the first platoon, if marching, HALTS. It is therefore necessary for the captain to give this command MARCH accurately on either the right or left foot. In case the company is halted the first platoon stands fast and is not dressed unless directed by the company commander. The other platoons execute their leaders' commands at the command MARCH, and are conducted towards the base platoon and halted successively in close column in its rear, so that the left guides cover if the movement has been to the right and so that the right guides cover in case it has been to the left. To make certain that the guides cover, each platoon leader should halt when directly in rear of the left (right) guide of the base platoon and command "squads left (right)" and when the front rank of the last squad is abreast of him add MARCH, 3. *Platoon* and when the squads have united in line, 4. HALT. The platoons are not dressed.



Being in column of platoons, the Fourth Platoon leading:-
1. Close on Fourth Platoon.
2 MARCH.

Note:- In forming close column from column of platoons the guide remains as before the movement.

PLATE 231.

the movement is executed as described in the preceding paragraph.

In closing on the leading platoon the guide remains the same.

Mass Formations.

212. Being in column of platoons, the command is: 1. *Close on first (fourth) platoon*, 2. MARCH.

Before explaining this movement we wish to emphasize the necessity of the students getting clearly in mind the two formations, the one he has (column of platoons) and the one he wants (close column). As this movement can only be executed on the leading platoon the instructor must be careful about his command or he will announce the rear platoon.

Let us assume the company is marching with the fourth platoon leading. The captain commands: 1. *Close on fourth platoon*. The leader of the fourth platoon should command "platoon" and caution his men to halt at the command MARCH. The leaders of the other platoons should caution "continue the march."

The captain having heard all the platoon leaders give the correct commands and cautions, adds MARCH, whereupon the leading platoon halts, but is not dressed unless so directed by the captain. The other platoons continue the march and are halted by their leaders successively (in the order 3rd, 2nd, 1st) in close column in rear of the leading platoon. Each platoon leader should command "platoon" in sufficient time to add HALT so that his platoon will when halted be eight paces from the preceding platoon. It is a very common error not to give the command "platoon" soon enough and then be forced to hurry the command HALT with the result that the halt is poorly executed.

If this movement is executed from a halt, the leading platoon stands fast. Its leader should caution "stand fast" at the first command of the captain. The leaders of the rear platoons command "forward" at the first command of the captain. The rest of

213. Being in column of squads, the command is: 1. *Line of platoons (so many paces)*, 2. *Right (left)*, 3. MARCH, 4. *Company*, 5. HALT.

Before analyzing the command let us glance at the plate and get clearly in mind our two formations. Now let us analyze the command, the first part of which is "line of platoons (so many paces)." This tells us of the desired (new) formation. The command "right" tells us that the formation will be on the right of the leading platoon. From the command: 4. *Company*, 5. HALT, we infer that the leading platoon marches forward until halted.

Let us assume that the company is in column of squads and that the captain commands: 1. *Line of platoons, 20 paces*, 2. *Right*.

The leader of the leading platoon should command "forward" if at a halt and caution "continue the march" if marching. The leaders of the rear platoons should command "column half right."

The captain having heard all his platoon leaders give the correct commands, adds MARCH to start the movement. When the leading platoon has advanced the desired distance he (captain) halts it by the command: 4. *Company*, 5. HALT. The leaders of the rear platoons conduct their platoons in column of squads on the right flank and halt them successively at the prescribed interval (20 paces) abreast of the leading platoon.

If the captain wishes the company to be in "line of platoons" with normal intervals he leaves out any reference to the interval in his command as: 1. *Line of platoons*, 2. *Right*, 3. MARCH, 4. *Company*, 5. HALT.

If he wishes the company to form in close line his command is: 1. *Line of platoons, seven paces*, 2. *Right*, 3. MARCH, 4. *Company*, 5. HALT.

Caution. As this is a successive movement, the leading platoon should move at a quick time in case the movement is executed at a double time. In this case only the rear platoons would proceed at a double time.

Being in column of squads:-
1. Line of platoons, 20 paces,
2. Right, 3. MARCH, 4. Company,
5. HALT.

Note:- If no interval is designated, the platoons form at intervals of platoon front plus 5 paces.

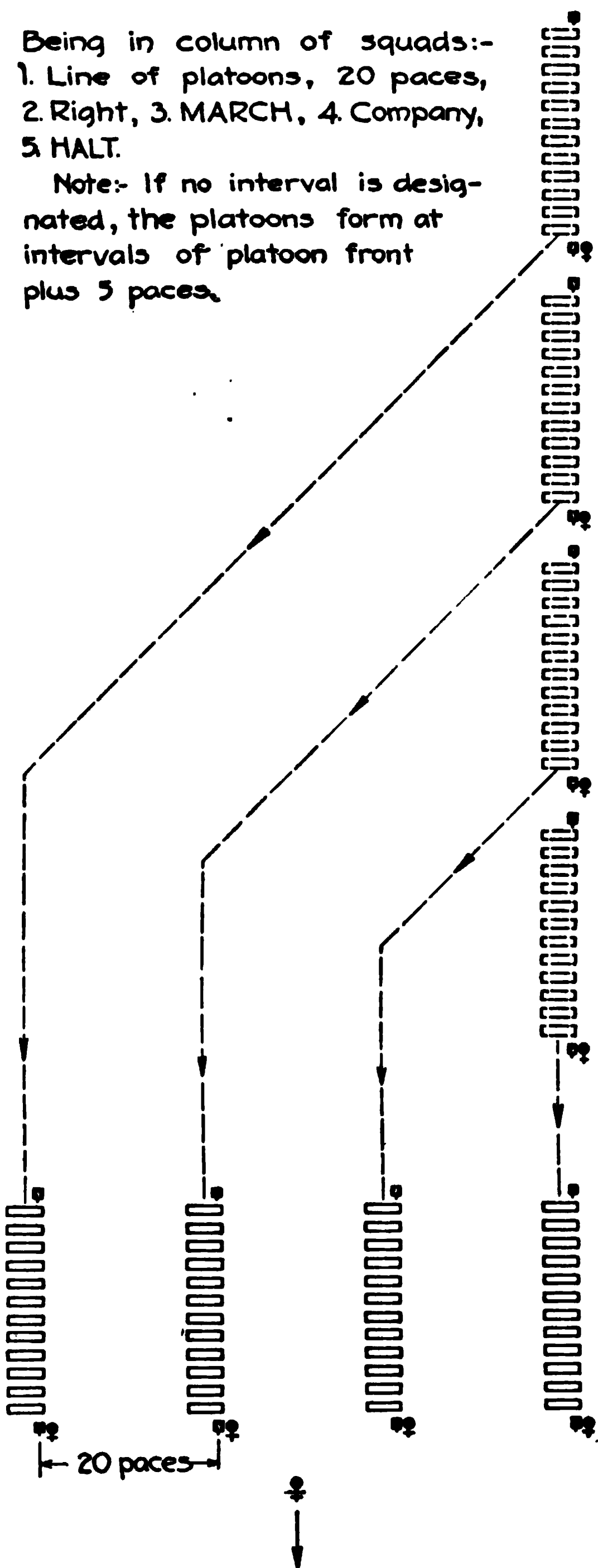
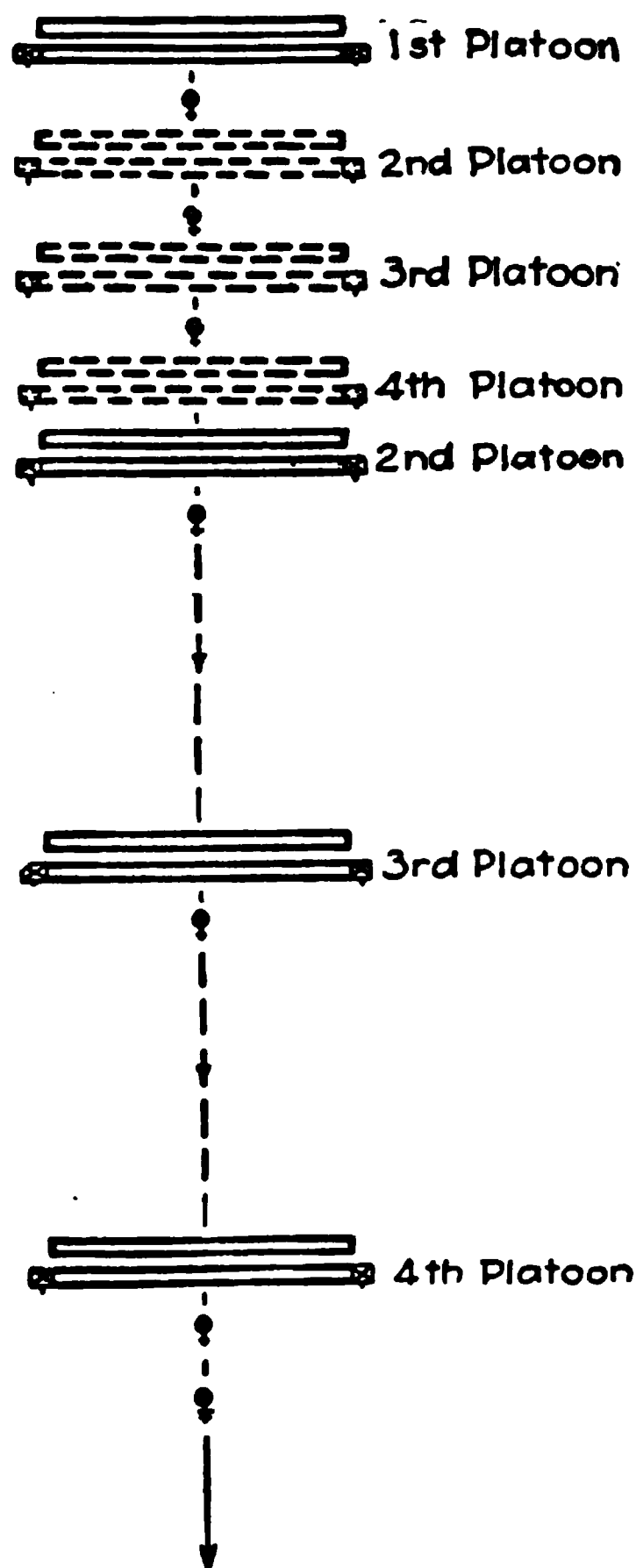


PLATE 232.



(Being in close column, the 4th Platoon leading, to extend the mass:-
 1. Extend on First Platoon, 2 MARCH.
 Note: The position of the Captain and the leader of the 4th Platoon is not shown in the original formation.)

PLATE 233.

To Extend the Mass.

214. Being in close column, the command is:
 1. *Extend on first (fourth) platoon*, 2. MARCH.

If the student has learned how to form a mass formation from the various formations it will be easy for him to understand the reverse "extending the mass" or opening out again. However a knowledge of the two formations, the one you have and the one you want is just as essential in understanding the movements as it was in getting the company into a mass formation.

Let us assume that the company is in close column with the first platoon in rear and that the captain commands: 1. *Extend on first platoon*.

The leader of the leading platoon should caution "continue the march" if marching and "forward" if halted. The leaders of the rear platoons should caution "stand fast" if halted and "platoon," adding a caution to halt at the captain's command MARCH, if marching.

The captain having heard all his platoon leaders give the correct preliminary commands adds MARCH to start the movement.

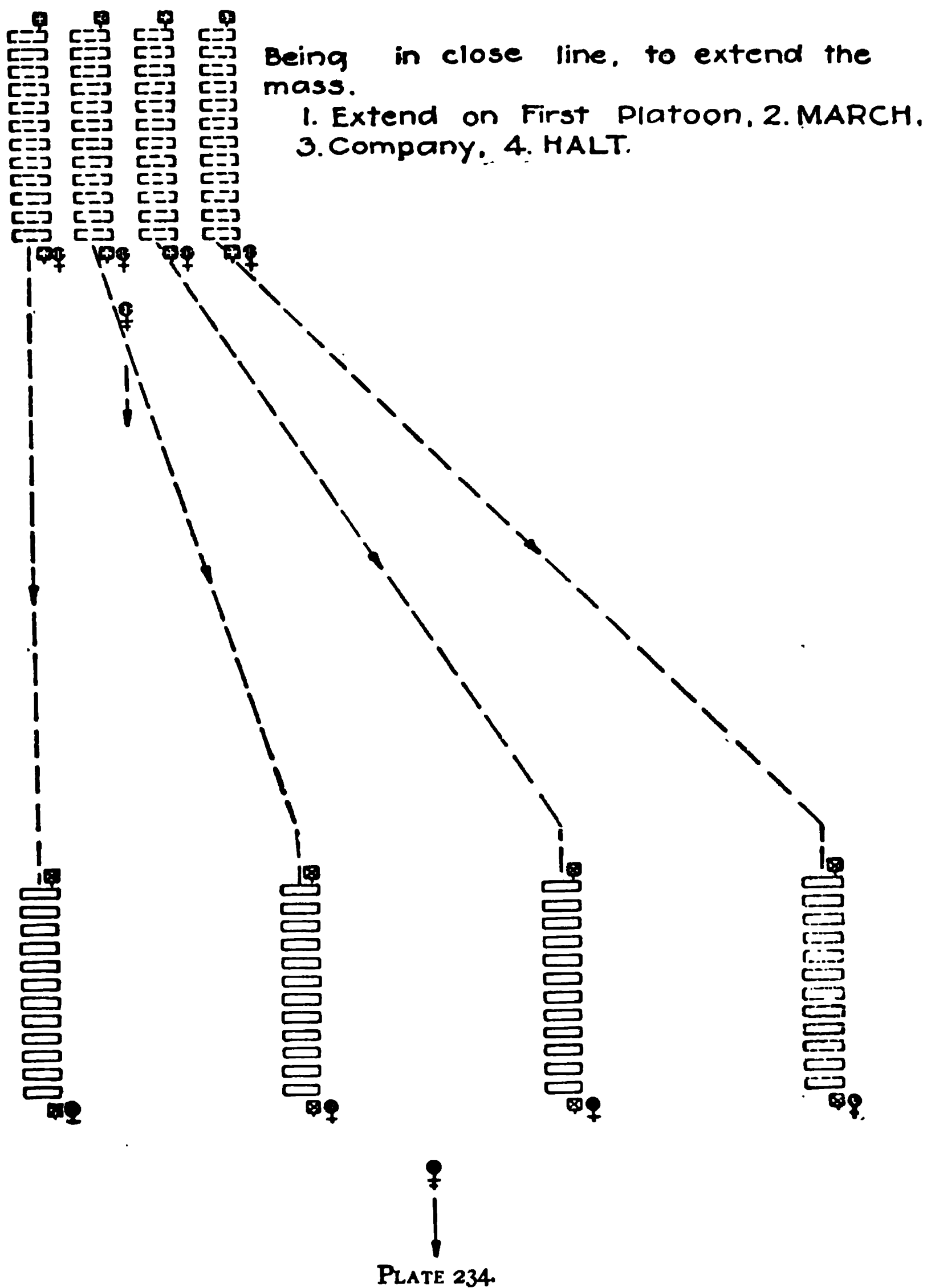
The leader of the 3rd platoon (the one next to the leading platoon) commands: 1. *Forward*, and adds MARCH in time to follow the leading platoon at a distance of platoon front plus five paces. The other platoons are moved forward successively in time to follow the preceding one at full distance (platoon front plus five paces).

Cautions. The captain must remember the two following rules:

1. The extension must be made on the rear platoon which therefore must be indicated (numerically) in the first command.

2. The movement is not executed at double time.

215. Being in close line, the command is: 1. *Extend on first (fourth) platoon*, 2. MARCH, 3. *Company*, 4. HALT.



After getting clearly in mind the two formations, the one we have and the one we want, the student should analyze the command which clearly indicates that the base platoon marches forward because the command: 3. *Company*, 4. HALT is given.

Let us now study the movement in connection with the commands.

At the captain's command, "extend on first platoon," the leader of that platoon commands "forward" if halted, and should caution "continue the march," if marching. Should the captain indicate a direction other than to the front, the leader of the base platoon should give the appropriate command to march his platoon in that direction. The leaders of the other platoons command "column half left (right)," dependent upon whether the base platoon is on the right or left of the line respectively.

Having heard each platoon leader give the correct preliminary command, the captain adds, 2. MARCH and as soon as the base platoon has advanced the required distance halts it by the commands: 3. *Company*, 4. HALT.

Each of the other platoons is conducted away from the indicated platoon and halted by its leader in its proper order in line of platoons abreast of the base platoon.

Caution. As this is a successive movement, the base platoon marches in quick time if the movement is executed at a double time.

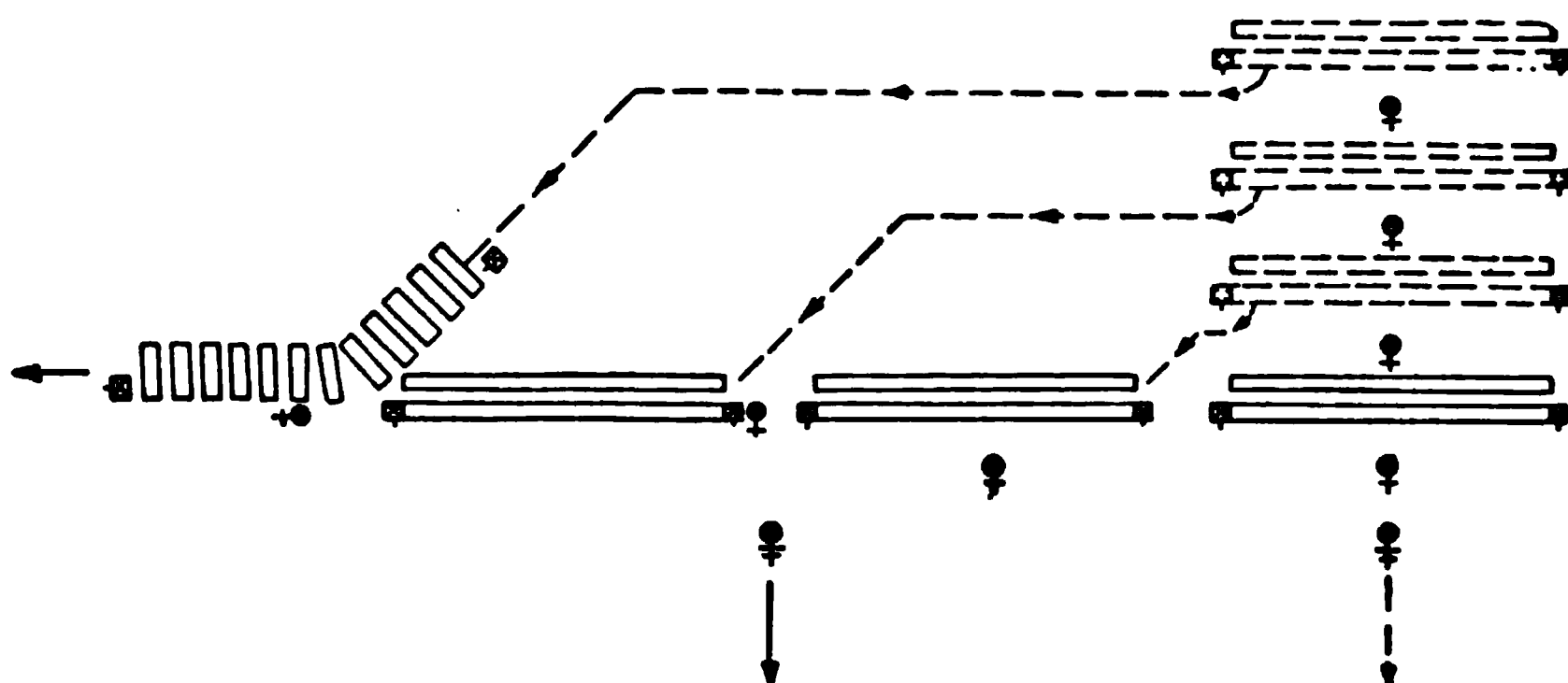
216. For special purposes, close column or close line may be formed or extended at other than normal distances or intervals by designating the distance or interval (so many paces) after the preparatory command for closing or extending.

For example the command in the preceding movement could be: 1. *Extend on fourth platoon, 50 paces*, 2. MARCH, 3. *Company*, 4. HALT.

Caution. It is a good plan to have your company execute these movements with extended intervals as a check on the judgment and attentiveness of the platoon leaders.

217. Being in close column to execute right front into line, the command is: 1. *Right front into line*, 2. MARCH.

This movement is executed as from column of platoons which has been previously explained. However, due to the reduced distance between platoons, each platoon



Being in close column, to extend the mass to the right:

1. *Right front into line*, 2 MARCH.

Note: Each platoon leader halts when opposite or at the point where the left of his platoon is to rest as shown in the Fourth Platoon. The Leaders of the First and Second Platoons have dressed their platoons and have taken their posts. The Leader of the Third Platoon is dressing his platoon.

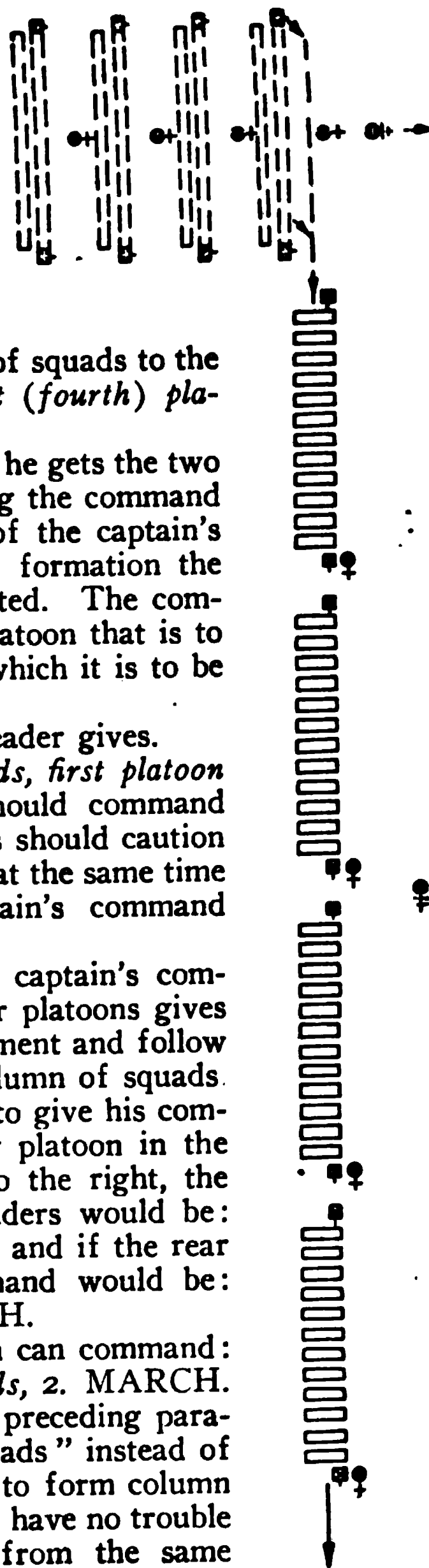
PLATE 235.

leader must be on the alert to give his commands at the proper time or the movement will be poorly executed.

Caution. The movement, "on right into line," is not executed from a close column formation.

Being in close column, to form column of squads to the right:-

1. Column of squads, First Platoon squads right,
2. MARCH.



218. Being in close column to march in column of squads to the flank the command is: 1. *Column of squads, first (fourth) platoon, squads right (left)*, 2. MARCH.

This movement is difficult for the beginner unless he gets the two formations clearly in mind. By correctly analyzing the command the movement is partially explained. That part of the captain's first command "column of squads" indicates the formation the company will be in when the movement is completed. The command "first platoon squads right" indicates the platoon that is to be the leading platoon as well as the direction in which it is to be marched.

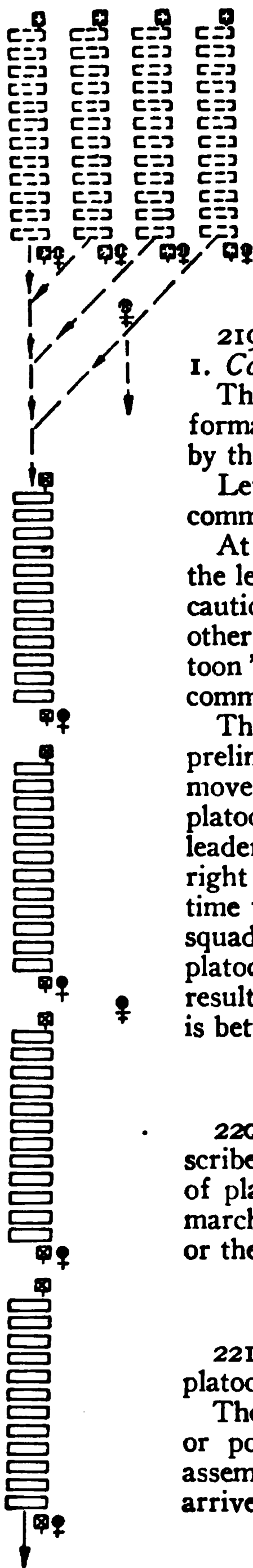
Let us now see what commands each platoon leader gives.

At the captain's command: 1. *Column of squads, first platoon squads right*, the leader of the first platoon should command "squads right." The leaders of the other platoons should caution "stand fast" if halted and "platoon" if marching at the same time cautioning their platoons to halt at the captain's command MARCH.

The first platoon executes squads right at the captain's command MARCH. The leader of each of the other platoons gives the necessary commands to execute the same movement and follow the preceding platoon at the correct distance in column of squads. Each platoon leader must be on the alert in order to give his commands so as not to lose distance. If the leading platoon in the close column is to lead the column of squads, to the right, the second command of each of the rear platoon leaders would be: 1. *Squads right*, 2. *Column half left*, 3. MARCH and if the rear platoon is to lead out to the right, their command would be: 1. *Squads right*, 2. *Column half right*, 3. MARCH.

The company being in close column the captain can command: 1. *Column of squads, first platoon, right by squads*, 2. MARCH.

This movement is executed as described in the preceding paragraph, except each platoon executes "right by squads" instead of "squads right." If the student understands how to form column of squads to the flank from close columns he should have no trouble with forming column of squads to the front from the same formation.



Being in close line to form column of squads to the front.

1. Column of squads, First Platoon forward,
2. MARCH.

219. Being in close line to extend the mass, the command is:
1. *Column of squads, first (fourth) platoon, forward*, 2. MARCH.

This is a very simple movement once the student visualizes the formation we have and the one we want. The latter is indicated by the command "column of squads."

Let us explain the movement in connection with the captain's commands.

At the first command "column of squads, first platoon, forward," the leader of the first platoon commands "forward" if halted and cautions "continue the march" if marching; the leaders of the other platoons should caution "stand fast" if halted and "platoon" if marching and then add a caution about halting at the command MARCH.

The captain having heard all his platoon leaders give the correct preliminary commands, adds MARCH; whereupon the first platoon moves out or continues the march and is followed by the other platoons in column of squads. All the platoon leaders except the leader of the base platoon, gives "column half right" or "column right" (we recommend the former) adding MARCH at such a time that each platoon will follow the preceding one in column of squads and at the correct distance. It is a very common error for platoon leaders to delay giving their commands MARCH with the result that distance is lost and the movement is poorly executed. It is better to give the command MARCH too soon than too late.

Route Step and at Ease.

220. The company marches in route step and at ease as prescribed in the School of the Platoon. When marching in column of platoons, the guides maintain the trace and distance. In route marches, file closers march at the head or in rear of their platoons or the company.

Assembly.

221. The company being wholly or partially deployed, or the platoons being separated: 1. *Assemble*, 2. MARCH.

The captain places himself opposite to or designates the element or point on which the company is to assemble. Platoons are assembled and marched to the indicated point. As the platoons arrive, the captain indicates the formation to be taken.

CHAPTER VIII.
SCOUTING AND PATROLING.
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SCOUTING AND PATROLING.

SCOUTING.

Introduction.

Importance of scouting and patrolling. Information and security. In time of war information concerning our enemy, where he is, how many men he has and what he is doing or intends to do, is absolutely necessary for us in making our own plans. The plans of all leaders, from the squad leader up to the commander-in-chief of the army, are based very largely on information concerning the enemy. If we do not know something about him we are fighting in the dark and practically certain to meet disaster.

This information of the enemy is obtained in many different ways. The most important way, and often the only one possible for small units, is by sending out individuals called *scouts* or small parties of men called *patrols*, to go and gather the information by visiting the places where it can be obtained, usually the ground occupied by the enemy.

Probably the worst thing that can happen to a body of troops is to be taken by *surprise*, that is, to be suddenly fired upon at close range by an enemy they did not know was near. This is almost certain to cause heavy losses in killed and wounded, and may result in the troops becoming completely routed and panic-stricken. Troops in column will suffer more from surprise than when deployed for battle, and a large unit will suffer more than a small one. But even a small unit deployed for battle will suffer if it is taken by surprise. It must learn where its enemy is, so that the men will know what to shoot at, how to conceal themselves, etc. It has often been said that a commander may be excused for being defeated but that there is no excuse for his being taken by surprise. Every body of troops in every situation should take such precautions for their own *security* that it will be impossible to surprise them.

The chief means of security, like the chief means of information, is the use of scouts and patrols. They are sent out to the front and flanks and when necessary to the rear of all units, when the enemy is known or thought to be anywhere near. These scouts and patrols *gain contact* with the enemy, that is, they find out where he is. They do this by examining all localities where the enemy might be hidden. They force him to open fire and thus show his position and how strong he is. The scouts and patrols send word of what they have discovered, by signal or message, to their leader, so that he may do what is necessary, either to attack the enemy, to defend himself or to retreat, as the circumstances decide. If the enemy attempts to advance against the friendly troops the scouts and patrols sent out to provide *security* will fire upon him and *delay* his advance even if they are not able to *stop* it.

From all this we can see that scouts and patrols have *two* principal duties to perform: 1. To gather *information* of the enemy; and 2. To provide *security* for bodies of troops. And so patrols are divided into two general classes, according to the duty to be performed: 1. *Information* (or reconnoitering) patrols; and 2. *Security* patrols.

Of course *information* about the enemy adds to our security, as it makes it less likely that the enemy can surprise us. So information patrols *do* provide security. But generally an information patrol is not *directly* responsible for the security of any particular body of troops. Its duty is to gather information without being discovered by the enemy. It does not interfere with the enemy's movements nor fire on him except in self-defense. It usually goes to a considerable distance, several miles perhaps, from the body which sent it out.

Security patrols on the other hand are not concerned with gathering information except such as is necessary to the *immediate* safety of the units they are covering.

They usually fire on the enemy whenever they see him. They must be able to communicate instantly with their commander, and therefore they cannot be far away, usually a few hundred yards only, and if possible between the enemy and the troops they are protecting.

There is no sharp line between these two classes of patrols. An *information* patrol helps to provide security, but is sent out especially to gather *information*, and is not responsible for anything but its own security. A *security* patrol also gather *information*, but its special duty is to cover and protect the body which sent it out.

Qualifications and training of scouts. Scouting and patrolling, for both information and security, are carried on both by day and by night. So important is the duty that our organization provides for 2 scouts in each infantry squad. Every officer and non-commissioned officer should be able to lead a patrol, and every soldier should know his duties as a member of patrol.

Scouts operate very close to the enemy, right under his nose so to speak. The duty is difficult and dangerous. Scouts must be intelligent men of good physique, that is, strong and active, and especially having good eyes and ears. There will be times, at night, when they must depend on their ears alone. The scout must be a good shot, he must be able to move quickly while close to the enemy without being seen or heard. He must be able to see much, and to understand, remember and describe what he sees. He should be able to read a map, use a compass, make a simple sketch and an intelligent report.

Before the late war we thought that efficient scouts were rare men, that they were born rather than made. We now know that the average intelligent man of good physique can be made into a capable scout by proper training.

It is the duty of the platoon leader to select and train his scouts. As many as possible of the men in a platoon should receive this training, which should include:

Outline of course of training. 1. Elementary education, reading, writing and arithmetic. This is given in the public schools, and plenty of men having the necessary education can be found.

2. Infantry drill, physical training, discipline, rifle marksmanship. These important matters are covered in other courses in this volume.

3. Individual movement, by day and by night, in the presence of the enemy.

4. Concealment, while moving and while in position, day and night.

5. Observation; which will include:

a. Selection of good observation posts.

b. Selection of routes to observation posts.

6. Occupying the observation post.

7. Searching ground from an observation post.

8. Interpretation of what the scout sees.

9. Listening by night.

10. Writing intelligent messages or reports on the things the scout has seen or heard.

11. Sniping.

Items 3 to 10 inclusive are covered in this course. Sniping is covered in the course in Musketry.

Having given our scouts this individual training we must instruct them in their duties as members of a patrol, and teach our non-commissioned officers and intelligent privates how to lead a patrol. An ideal patrol would be all scouts. One man who is not intelligent or properly trained may get the entire patrol into trouble. A patrol leader should always be a trained scout, and an important patrol should at least include several capable scouts.

The individual training of the scout is accordingly followed by the principles governing the conduct of a patrol.

The operations of a reconnoitering patrol are included in this course. The duties of scouts and patrols in combat, on the march in advance or rear guard, and on outpost, are included in the courses in Musketry and Minor Tactics.

Equipment. Scouts have the same equipment as other riflemen in the squad, and in addition tracer ammunition. It is desirable that each should possess a watch, compass, pencil and note book. A scout should always have this equipment when sent out on any mission requiring its use, but any unnecessary equipment which might burden him, should be left behind. At night or on certain special missions scouts may be provided with additional special equipment.

INDIVIDUAL MOVEMENT BY DAY.

Individual movement near the enemy is an important part of a scout's training. The methods are simple and few. They should be second nature to the scout.

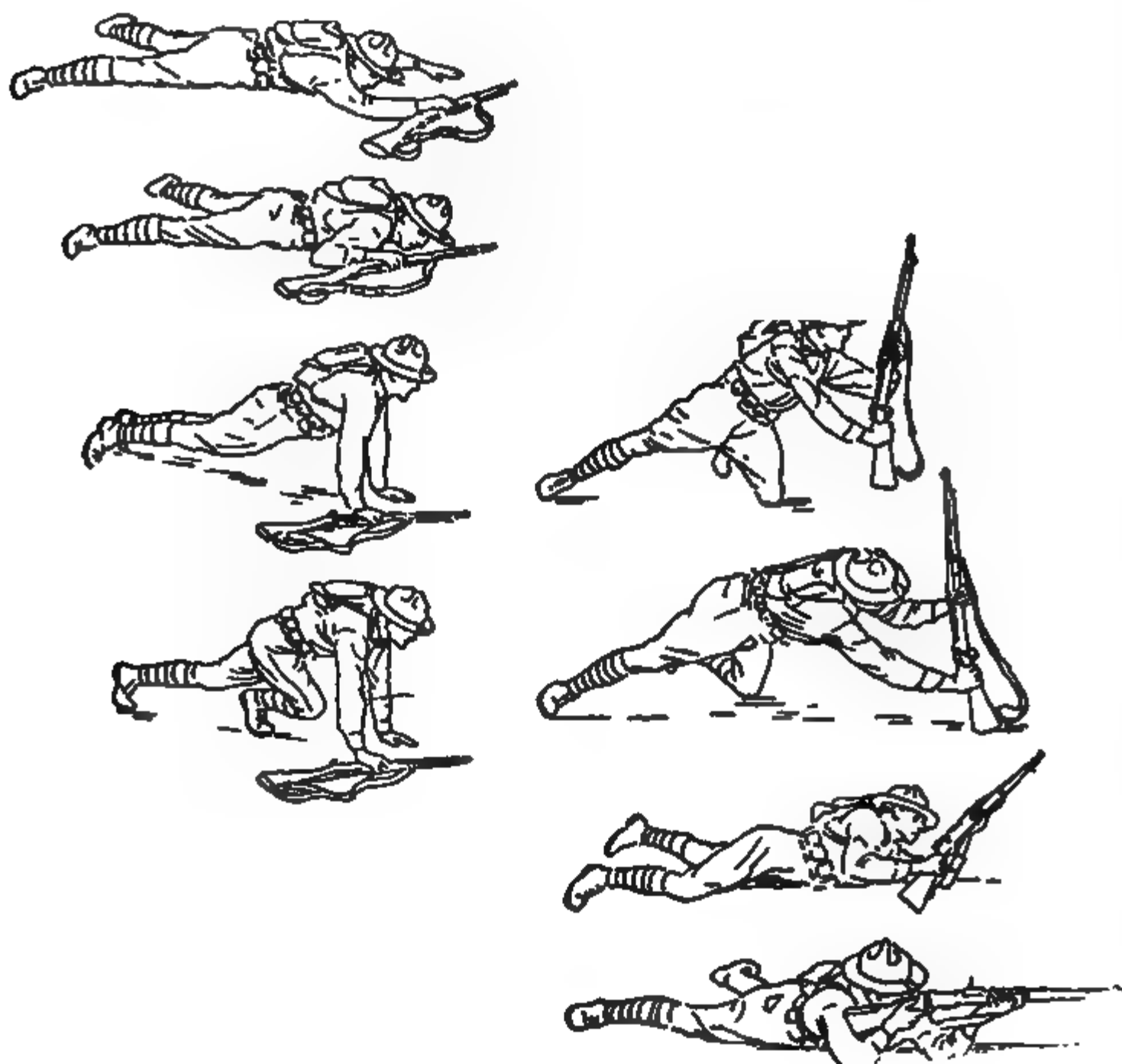


FIG. 1.—Scout Springing from Prone Position.

FIG. 2.—Scout taking the Prone Position from a Run.

PLATE 238.

The prone position. The scout lies on his stomach, every part of his body as close as possible to the ground; legs extended and well separated with heels down; left side of the face on the ground; arms extended overhead (to the front) and flat; the rifle, if carried, lies on the ground, grasped in the right hand at the balance. If firing, the scout takes the position shown in Plate 238, lower right figure, and described in Rifle Marksmanship.

To rise. (a) Draw the arms back slowly until the hands are opposite the chin, rifle grasped in right hand at the balance. See Fig. 1, Plate 238.

(b) Rise on the hands and toes by straightening the arms, keeping the knees stiff, weight of the body on the left arm and leg.

(c) Swing the right leg forward and jump off to the right front. Swing the rifle across the body, grasping it with the left hand at the rear sight and the right hand at the small of the stock.

To move at a run. Move fast, bending as low as possible, left shoulder forward, rifle grasped in both hands. See lower left figure of Plate 238.

To take the prone position from a run, with rifle. (a) Start falling as the right foot strikes the ground. Advance and plant the left foot in front of the right, toe of the left foot pointing well to the right. See Plate 238.

(b) Fall forward on the outside of the left knee. The rifle, grasped at the small of the stock by the right hand and at the rear sight with left hand, in a vertical position, is thrown forward to full extent of the right arm.

(c) Extend the body and break the fall by planting the butt of the rifle on the ground as far to the front as possible. With the weight of the body on the left knee and on the piece, roll forward on to the left side.

(d) As the body strikes the ground the butt of the rifle is forced up and carried back to the right shoulder. Drop the right elbow to the ground. Meantime engage the left arm quickly in the hasty sling, and lower the left elbow to the ground. Spread the legs and lower the heels to the ground.

This is the prone position for firing. If he does not intend to fire the scout takes the position shown in the upper left figure of Plate 238, after breaking the fall with the rifle as described.

To take the prone position from a run, without rifle. Execute like the preceding movement except break the fall with the left side and shoulder, throwing the arms well to the front and taking the prone position, not firing. In executing either of the forgoing movements care must be taken not to allow the right leg to flop up.

To take the prone position from a walk or halt, with rifle. (a) If walking come to a halt. Place the left arm in the hasty (or loop) sling.

(b) Stoop and throw the right foot as far as possible to the rear. Grasp the rifle in both hands as heretofore described. Plant the toe of the butt on the ground about 6 inches in front of and the same distance to the right of the toe of the left foot. See figure in Rifle Marksmanship, Plate 129.

(c) Without releasing the hold on the rifle or moving the feet at the butt of the piece, place the right elbow on the ground.

(d) Force the legs and body to the rear, spread the legs apart, heels down, and lower the body to the ground, keeping the butt of the piece in place.

(e) Carry the butt of the piece to the right shoulder.

(f) Lower the left elbow to the ground, taking the prone position for firing.

If it is not intended to fire the sling is not taken, and after lowering the body to the ground as described, the scout takes the position shown in Plate 238.

To take the prone position from a walk or halt, without rifle. If walking come to a halt. Dive forward, breaking the fall with the hands, and take the position shown in Plate 238.

With practice all the foregoing movements may be performed smoothly and continuously and with great rapidity.

To adjust or slightly change his position the scout should move so slowly, keeping his body close to the ground, that such movement could not be detected by an observer looking directly at him.

To creep. Being in the prone position, raise the body slightly on the hands and knees, head and buttocks well down, elbows bent to rear, knees drawn up slightly, not as far forward as the hip joints. In this position creep forward, moving the knees slightly keeping the head and buttocks always well down. This movement is not the same as the usual "hands and knees." The body is lower and less conspicuous. While moving the elbows are on the ground and the knees never come as far forward as the hip joints. This insures that there will be no conspicuous raising

of the shoulders or buttocks. The rifle is held in the right hand just above the balance, care being taken to keep the muzzle off the ground. See Plate 239.

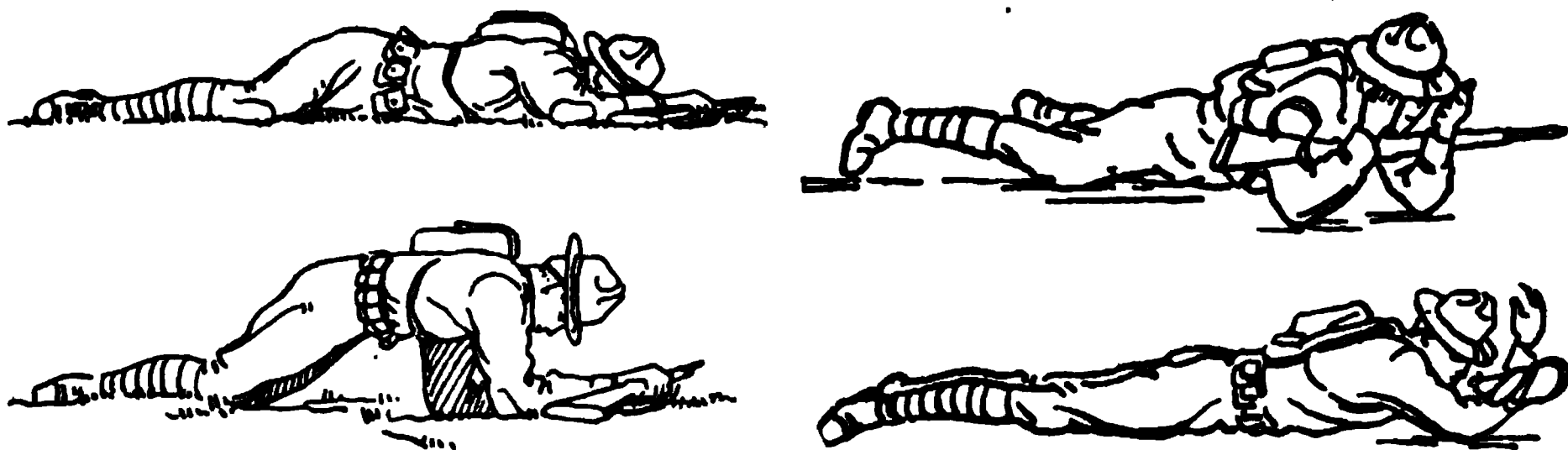
To crawl. Being in the prone position as in Plate 238:

- (a) Draw back the hands opposite the chin, keeping the elbows on the ground.
- (b) Draw up the right leg, keeping the knee and heel on the ground.
- (c) Slide the body forward by propelling with the right leg supporting the weight of the upper part on the forearms.

No part of the body should be off the ground, especially forearms and elbows. The rifle is held as in creeping.

Continue by drawing up the right leg and sliding the forearms forward. See Plate 239.

A more rapid but more conspicuous method of crawling is to raise the body slightly on the elbows and push forward alternately with both legs. The rifle, if carried, is laid in the crook of the elbows. See Plate 239.



Creeping.
The Slow Crawl.
The Rapid Crawl.

PLATE 239.

Creeping and crawling are slow and tiresome. They are employed when the scout is greatly exposed to view in the open or behind inadequate cover.

The various movements should be practiced first by the numbers, slowly, until they can be done with perfect precision. Afterwards the speed is increased until they can be executed smoothly in the shortest possible time.

The particular method of movement in any case must be determined by the scout's mission, especially the distance to be travelled and the time he has, the available cover, and the probability that the locality is observed by the enemy.

As a general rule when cover is good and at a considerable distance from the enemy, the scout may move at a run. As he approaches the enemy or as cover becomes poor he becomes more cautious, using the slower but less conspicuous methods.

The advance by bounds. The usual advance is by "bounds." From a covered position favorable for observation, the scout selects the next position in the general direction of his advance. He then selects the most direct route affording concealment. He selects intermediate, concealed stopping places if necessary. He decides what method of movement he will use on each portion of his journey.

For example: In Plate 240, a scout at *A* has selected *B* as his next observation post. From *B* he can certainly see things not visible from *A*; there are no intermediate points suitable for observation; and it is not wise to go beyond *B* until he has observed from that point and picked out another suitable post.

He decides to creep along the dead tree to the bank, thence along the bank to a point near the bush and tree. He might then crawl the short distance from the bank to the tree or spring up and rush across this open space. This would depend upon his mission, the amount of time at his disposal, and his knowledge as to the watchfulness of the enemy and the probability of his being seen during the rush.

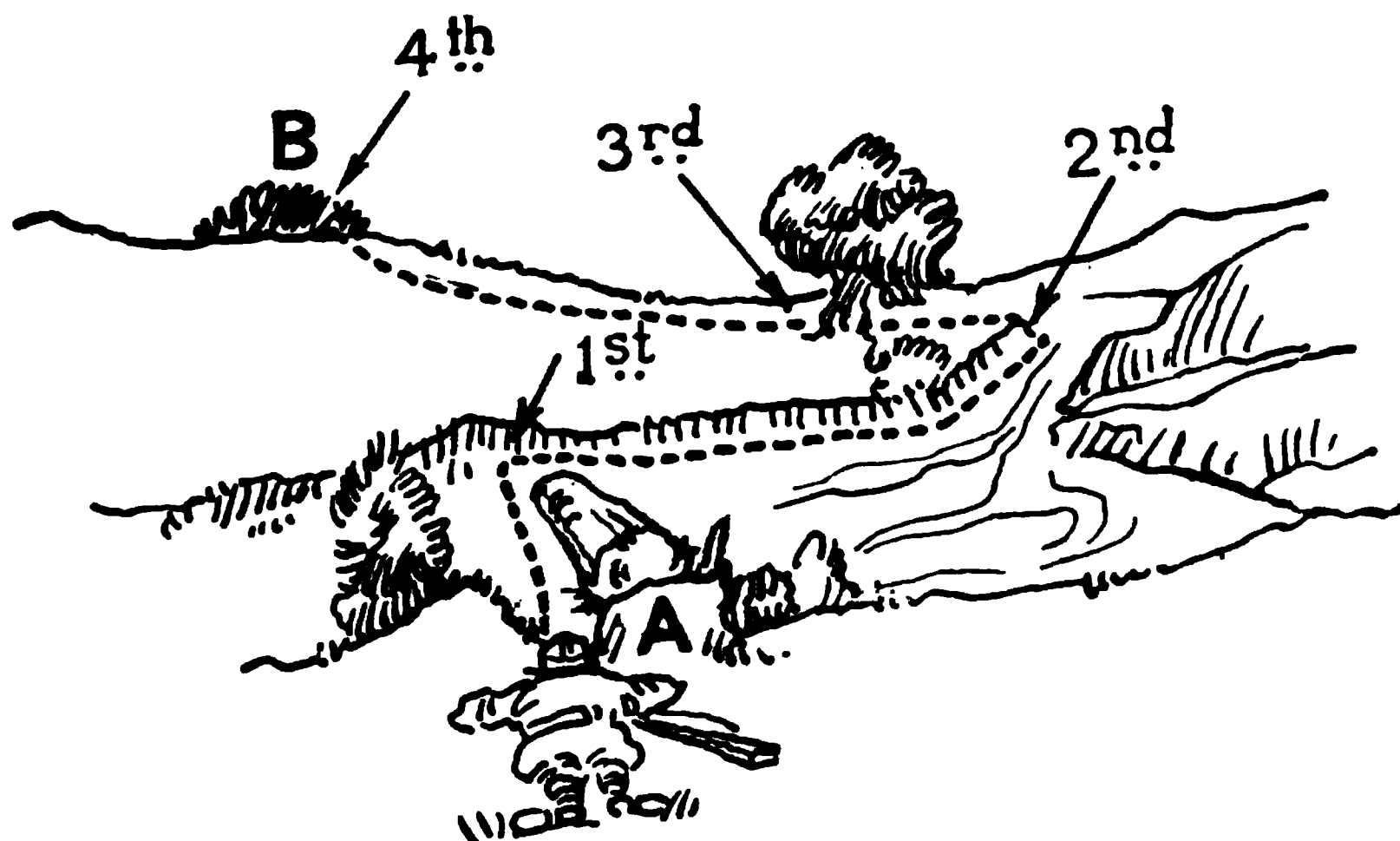


PLATE 240.—Advance by Bounds.

Changes of direction should be made at the end of bounds, not at intermediate points, except when following some well-defined route.

The scout should note landmarks and his position with reference to them from time to time. This will aid him during his advance and his subsequent return to his own lines.

INDIVIDUAL MOVEMENT BY NIGHT.

The methods of movement by night differ from those used by day. Except in emergency, as to escape from an ambush, the scout seldom runs by night. The reason for running by day is to reduce the time of exposure to observation. This reason does not exist at night because of darkness. By running the scout would collide with material objects, fall into ditches, shell holes, etc., thus making a great deal of noise and betraying his presence.

The usual method of movement by night will be a cautious walk in a stooping posture, the rifle (if carried) held in both hands. It will usually be possible to continue to walk, if no noise is made, until quite close to the enemy, and in localities where in daylight it would be necessary to creep or even crawl.

In walking through grass or low weeds the scout raises his foot until it clears the top of the vegetation, planting it carefully heel first. This avoids the swishing noise caused by forcing the feet through the weeds. In walking on gravelly or rocky ground the scout should avoid shuffling. The foot should be raised well clear of the ground and planted toe first, the heel being then gently lowered. This enables the scout to feel his footing and it suppresses the click of the heel on striking hard ground. Creeping and crawling by night are executed in the same manner as by day, with the precaution that as he cannot see clearly the scout must feel the ground in front of him as he moves with his hands.

The rapid methods of taking the prone position and of rising and jumping off used by day are not used at night. The necessity for speed does not exist. Also it is unsafe to fall upon ground that cannot be seen. It is apt to make a noise and may even result in personal injury. In taking the prone position at night the scout comes to a halt, stoops and feels the ground at his feet, and in front of him, and then lowers himself slowly and quietly to the prone position. He rises in the same manner.

The scout should frequently STOP, LOOK and LISTEN.

Unless the night is very bright (moonlight) or flares are being sent up, it should be possible for a trained scout to advance by careful walking and creeping to within 100 yards of an enemy. Thereafter it will be advisable to creep and crawl to within 15 or 20 yards. Thereafter the movement should be by inches.

Routes for night movement. By day concealment is obtained by choosing routes through close terrain, such as woods, brush, standing crops, ravines, ditches, etc. At night this is unnecessary as darkness gives concealment. It is difficult to move through close or broken terrain at night without making a noise. Routes for night movement should be as far as possible in the open. It is also desirable that such routes be in low ground in order to keep off the skyline, and to enable the scout to see landmarks, etc., in silhouette against the sky.

During the day the scout will have opportunity to view the terrain after each bound, select his next stopping place and the best route thereto. At night this will not be possible. Except for very short distances or in ground with which he is perfectly familiar the scout at night must usually follow a route which has been carefully selected in advance, using his compass and checking his position frequently. The bounds should be short and the route as direct as possible. It will seldom be necessary to make wide detours for security, as must often be done by day.

If scouts or patrols are being sent out frequently they do not always move over the same routes, as this gives the enemy an opportunity to prepare ambushes and capture them. It will usually be advisable to return by a different route.

If he loses his bearings the scout should never wander aimlessly about, but should halt and think over his situation, try to locate some landmarks by which he may determine his position, using his compass if he has one.

Advance by bounds. The advance by bounds is used by night, as by day.

When the route would not be too devious each bound should follow some feature of the terrain which will serve as a guide, for example, the edge of a wood, a stream, road path, railroad, etc. The probability that the enemy may be met on the natural routes of movement as his position is approached, should not be overlooked. When there are no features to serve as a guide the bound should generally be in a straight line from one locality to the next, in open terrain where movement is not too difficult and landmarks may be observed.

Directions are determined from the map, and if he has a compass, the scout uses it to follow the courses. If he has no compass he must determine direction by the north star, and direction and position by any landmarks conspicuous enough to be seen by night, such as hill tops and gaps, woods, towns, large buildings, etc., and the direction of the wind.

Each bound should end near some prominent object of the terrain which the scout can identify at some distance. Thus, one bound might be from the edge of a wood to a freight house on a railroad, running perpendicular to the scout's route. Even if he misses his direction he will strike the railroad at some point and probably be able to see the freight house. If not, he moves along the track in one, or both directions, until he finds it. He is then oriented for his next bound.

Passage of obstacles. This is a difficult matter at night. The scout should know the location of gaps or openings in both the friendly and hostile obstacles. The latter are apt to be guarded.

To cut a gap is slow and hard work. It is not often necessary. The top wires should be left standing as the gap is then less apt to be noticed.

The scout will usually walk over the entanglement if low, and crawl under it if high, cutting only such strands as interfere with his progress. He should be provided with wire cutters.

On encountering an obstacle the scout takes a prone position in front of it, tries to see it against the skyline and study the construction of the obstacle. He decides whether to attempt to walk over or slide under it. He slides on his back, propelling himself with legs and shoulders, feeling ahead and raising the wire with hands; or on his stomach, cutting the lower strands as he goes. In walking over a low obstacle

strands are pressed down with hands and a clear space found for the foot before it is moved.

It is better to pass through the obstacle midway between pickets, as here there are fewer wires, and they are more slack and more readily pushed out of the way.

When it is necessary to cut a strand it is grasped in the left hand close to the point of attachment to the picket and severed with a wire cutter. The long end is then carefully placed aside. If a wire be cut midway between pickets, the end not grasped in the left hand is apt to spring back, making a noise. The scout should wear leather gloves. A piece of burlap or a handkerchief wrapped around the pliers will deaden the sound. Care should be taken that no metal parts of the scout's equipment strike the wire.

CONCEALMENT BY DAY.

To accomplish his mission of gathering information the scout must see without being seen. There are a few simple but very important principles which he must know and apply if he is to remain in position or move about close to the enemy without being discovered. They are as follows:

Principles of Concealment.

1. Immobility, behind cover or in the open, is the surest means of concealment. Remain motionless at all times except when it is absolutely necessary to move.
2. A scout exposes himself as little as possible, both in position and when moving. He takes advantage of every feature of the terrain which affords concealment.
3. A man in a prone position is far less apt to be seen than when standing. Accordingly except when well covered, a scout should observe from a prone position. In moving across open terrain especially subject to observation, he advances by creeping or crawling. If he runs he does so in a crouching position.
4. In deciding on his method of movement the scout balances the probability of being seen while in an erect position against the time required to creep or crawl.
5. Whenever he crosses open terrain, and whatever his method of movement, the scout moves rapidly to reduce the time during which he is exposed to view.
6. A scout seldom moves continuously. His usual method of advance is by "bounds" from one covered position to another.
7. Before making a bound the scout selects the exact locality to which he will move, the exact route he will follow, and the manner in which he will move.

These principles are followed by wild animals, as a matter of instinct.

Whenever he halts in the open, and even behind cover, the scout lies prone and absolutely still with all parts of his body as close as possible to the ground (not forgetting his heels). To observe he raises his head very slowly, avoiding any rapid or noticeable movement. When he changes position, any route or locality or any action which might tell the enemy of his presence are carefully avoided.

The scout must be expert in the use of every class of cover. Every precaution must be taken to screen himself from view at all times. No detail is too small to be neglected. Even when he believes that he is not under observation he should take no chances, but act always as if he were being watched.

The successful scout must know how objects appear to an observer, what details of form, color and movement attract the eye. Remembering that the observer usually has a wide field to watch the scout neglects no means of concealment and no rule of conduct, however slight, which will make him less visible.

The following detailed precautions for concealment should be observed by the scout:

1. Avoid skylines, even at night. Objects are most conspicuous when seen against the sky.
2. It is better to look around the end of a boulder, wall, etc., rather than over the top (even if not on a skyline), or through a bush or hedge rather than over or around.



The wrong way



The right way

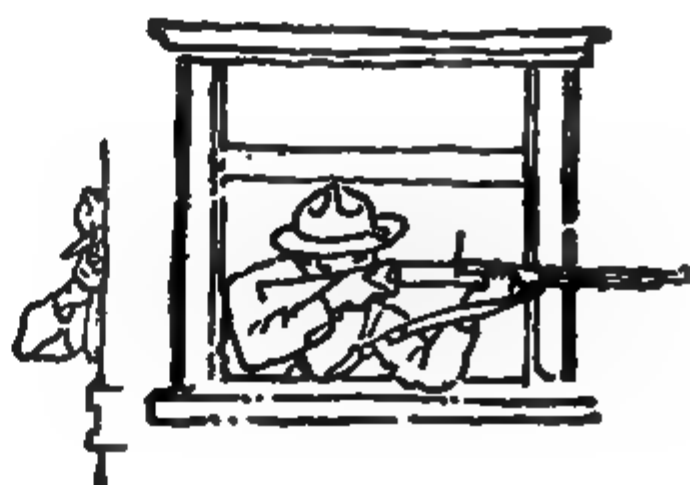


PLATE 241.—Concealment in Position.

3. If it be necessary to look over a crest, especially a skyline, choose a point where it is irregular or broken by depressions, vegetation, rocks, etc. See Plate 241.

4. In moving, the scout should try to keep a screen, that is, any feature of the terrain which will conceal him, between himself and any localities which might be occupied by the enemy.

5. Where there is any choice of routes, select a terrain favorable for concealment. The most favorable terrain is, of course, any covered by woods or vegetation (brush, weeds, crops, etc.) of sufficient height and density to afford concealment; also ravines or small valleys, especially if wooded.

If the country be open, terrain which is diversified, that is covered with brush, weeds, stumps, boulders, etc., especially if there be shadows, is more favorable to concealment than terrain of a uniform appearance or texture with no diversification.

Rolling terrain, even if open, is favorable for concealment. A fold in the ground a foot deep will afford good cover for a man in a prone position.

6. Objects are often betrayed by their shadows especially in ground having no natural shadows. Therefore the scout should try both when in position and especially when moving, to keep in the shade. In looking around a bush, stump, boulder, etc., choose the shady side. Shadows are less conspicuous near noon than in the early morning or late afternoon. Shade also reduces contrast. A small bush in the shade of a larger may be a less conspicuous place than the larger bush.

7. In firing from cover, such as a tree or window, fire around the *right* side. See Plate 241.

8. Single bushes or other objects standing alone, which afford concealment, but no protection from fire, should generally be avoided. If the scout is seen to drop behind them they afford excellent aiming points for the enemy.

9. In observing from a house, keep well back from the openings. Do not stand in a doorway or lean out of a window. A hole in roof or wall is more favorable for observation than a door or window. If on a roof, utilize the shadow of a chimney.

10. In crossing plowed land move in a furrow, or at the edge of the field, not across furrows when the body bobs up and down, and which also leaves tracks.

11. Always move under cover of a ridge, that is, on the slope farthest from the enemy. In moving in a small wood keep just inside the edge nearest the enemy.

12. Wear nothing conspicuous, for example, a uniform that is bleached white, equipment which glistens in the sun. White faces and hands are conspicuous, especially in sunlight. Glistening articles should be dulled by smearing with mud or paint. Hands and faces may be smeared with mud. Gloves may be worn. Keep the hat pulled well down over the eyes and do not upturn the face in observing. Artificial means of rendering a person less conspicuous may at times be used; for example, "snipers' suits" matching the terrain, leaves under the hat, a tree or bush held in front of the person, a sandbag placed over the head when looking over a parapet, etc.

13. The scout should avoid localities where he will be in sharp contrast with the terrain or positions and movements which will be noticeable. Thus, the uniform blends well with a cornfield, but would be very noticeable in a field of red poppies. In a terrain where the natural objects are vertical, as a burned wood, a man in an upright position may be less conspicuous than if prone.

14. The scout should take advantage of any occurrence which affords him concealment or diverts the enemy's attention. For example, a sudden gust of wind which waves the foliage and stirs the fallen leaves, or a cloud passing over the sun, gives opportunity for a bound. The enemy's attention may often be distracted by some diversion at another point, such as a fire, movement of men, smoke cloud, hat raised above a parapet, etc.

15. The scout should be careful not to alarm birds or animals, whose actions might betray the presence of a human being.

16. A man prone with his face down cannot be seen from an aeroplane at a height of 1200 feet or more, even in good light. A man moving can frequently be

seen at heights up to 2000 feet. A man either prone or moving in a deep shadow or in brush or tall weeds can seldom be seen from an aeroplane.

Many other precautions suggested by local conditions will occur to the resourceful scout.

CONCEALMENT BY NIGHT.

In stabilized warfare, night scouting and patrolling will be carried out on a large scale, and even in open warfare will often be necessary. The scout must be trained to operate at night.

At night the scout is hence less apt to be seen. But on the other hand, it is more difficult for him to gather information, as he can see little and depends chiefly on hearing. He must approach much closer to the enemy and has less chance to protect himself. Scouting by night is more difficult and more dangerous than by day.

Precautions as to Concealment by Night.

The following cautions should be observed by the scout during night movement:

1. The scout is far more apt to be discovered by the noise he makes than by being seen. *Noiselessness* is the important thing in concealment by night. A trained scout can often approach to within 5 yards of a sentry without being heard, whereas an untrained man will rarely get closer than 50 yards.

2. The scout should take advantage of any other noise to hide the noise of his own movements.

3. If challenged or fired upon the scout should remain absolutely motionless and noiseless. The enemy will then often conclude that he has made a mistake. The scout should not return the fire unless the enemy advances towards him.

4. Any equipment which rattles or glistens in the moonlight should be left behind. Steel helmets are particularly bad, as they click loudly on striking branches, twigs or barbed wire, and show an unmistakable outline. At night a visor or any head covering is not necessary. Most scouts prefer, however, a soft skull cap.

5. Men who have colds and are apt to sneeze or cough should not be sent on night duty. Do not chew tobacco. You will spit and make a noise.

6. To whisper, exhale nearly all the breath and thus avoid a hissing sound.

7. Next to noiselessness the most important thing at night is to *keep off the skyline*. Even on a dark night objects which would be invisible against a background may be seen in outline against the sky, and the figure of a man, especially if moving, is unmistakable. Skylines are not only the principal hills and ridges. A very slight elevation may form a skyline for an observer in a prone position in low ground nearby. So the scout should prefer low ground where he may be able to see the enemy on the skyline instead of the enemy seeing him. Keep out of hollows and shell holes which might contain gas.

8. The scout should remain motionless when a flare is set off or any other light appears. The best time to move is immediately after the flare goes out. Do not look at flares, as this temporarily blinds one. Look out for recurring flares.

9. Luminous watches or compasses should not be exposed to view. Carry them in the pockets or in the hand, not on the wrist or suspended from the neck.

10. Moonlight is favorable to the scout. If clouds are racing across the moon, use the darkness for movement and the light for observation.

11. Before attempting any movement, the scout should have his "night eyes," that is, the pupils expanded so that he can see as well as it is possible to see in the dark. The eyes are thus adjusted by looking into the darkness for a few minutes.

OBSERVATION BY DAY.

The scout's training for observation by day must include:

- a. Selection of observation points.
- b. Movement to and occupation of observation points.
- c. Study of the terrain and of the enemy.

Selection of observation posts. In order to gather information the scout must go to one or more observation points. He must be skilled in selecting good points, which can be reached without great exposure.

Before starting out he can tell from his map where he should go to observe. But his actual stations can usually be selected only on the terrain itself. The map guides him to the proper locality and he then selects the exact points he will use.

Positions elevated above the surrounding terrain will be chosen as a rule. But not always. There will be times when the bottom of a valley may be the most suitable place. Hilltops, crestlines, trees and buildings are favorable for observation.

But the scout must conceal himself. So of several good points he should choose the least conspicuous. It may be wise to sacrifice something for the sake of concealment. For example: If the observation post be a tree, he selects one having a background which does not mark the tree in strong relief. Also it should have foliage to hide the scout while he is in it, and its trunk should be concealed by other trees so the scout will not be seen climbing it. A tall tree in a wood or grove will be favorable. If the post be a building the scout should not expose himself at a door or window. If he occupies a crest he should choose a point where the line of the crest is broken by a depression, by rocks, trees, etc.

All unnecessary movement while at the observation post is to be avoided.

Moving to the observation post. Having arrived in the vicinity of a good post, the scout observes it closely for a few minutes. He notes all places from which he might be seen, either in his position or on the way to it. He selects a route with stopping places if necessary, so as to be hidden as far as possible from any enemy observers.

It may be necessary to make a wide detour to avoid crossing open spaces. The known or suspected presence of a hostile patrol or observer may cause the scout to choose a roundabout route or seek a different locality for observation.

In any event the route will seldom be a straight line. It is decided by two things, cover or concealment and the enemy. In general the route will lie on the edges of woods, in hollows or ravines, behind ridges, hedges, etc. Advantage should be taken of such cover, even if a considerable detour be necessary.

All positions which might be occupied by the enemy are noted and the scout moves as though he were being watched from such points. The scout also decides before each move the manner in which he will move (run, walk, creep, crawl).

In entering the observation post, the scout is particularly careful not to be seen.

Searching ground from observation post. It is easy to see even indistinct objects if they are moving, but to pick out motionless objects requires systematic searching. The trained scout searches the ground within his sight in belts parallel to the front at successively increasing ranges. He begins with the nearest zone (in his immediate front) for here he may find his most dangerous enemy. He searches the whole belt systematically from right to left. Places where an enemy might be concealed hold his eye longer than open spaces. In this manner, with his eye properly focused, he searches all places at the same range. He then proceeds to another belt farther out, but overlapping the first and searches back from left to right, and so on until he has thoroughly examined all terrain to the front and well to the flanks within sight. This search is made with the naked eye. If he has field glasses, the scout uses them for a closer examination of any suspicious spots.

On all his missions the scout is the eye of his commander. If his reports are wrong the commander's plans based on these reports will be faulty, and perhaps result in disaster. Therefore the scout should be absolutely accurate in his observations and reports. He should overlook nothing, but should never tell more than he knows. He should not report as a *fact* something that has been told him. Statements of others and deductions made on the spot may be of value and should be reported, but the report should make it clear that these are not facts.

Interpretation of signs and trails. Certain deductions may be made from certain facts and the trained scout should be able to interpret what he sees.

For example, the scout should be familiar with the appearance of tactical units on the march, in camps or deployed. This knowledge is gained by frequently watching units of known strength at varying distances, as during maneuvers.

The scout should be able, from practice, to interpret the tracks of men, animals and vehicles. For example: The length of the stride and the footprints will indicate whether a man was running or walking. A man running digs in his toes. A team pulling a heavy load close in towards each other and dig in their toes. Deep wheel tracks indicate heavy loads. Footprints indicate the direction of travel. A motor vehicle passing through a puddle leaves a muddy track on the side towards its direction of travel. It turns to the right (left) in passing another vehicle. Troops usually keep to their right in marching. The droppings of animals will indicate the time since a column has passed. Fresh droppings are soft and moist and have an odor. They first lose their odor, next dry on the surface, and finally harden. Halting places are easily recognized. Tracks leading to farm houses, wells or orchards indicate poor discipline.

The strength of a column may be estimated from its length or the time required to pass a given point. Thus 175 infantry (in column of squads), 110 cavalry at a walk or 200 at a trot, and 5 guns or caissons, will pass in one minute. Dust clouds indicate the kind of troops; a low dense cloud, infantry; a high dense cloud, cavalry; an irregular cloud, animal transport; a rapidly moving cloud, motor transport.

The scout should know the appearance of the usual works of field fortification, trenches, obstacles, machine gun emplacements. He should be able to judge the size of a gun from its appearance, or from the appearance and sound of a bursting shell. He should recognize a machine gun or howitzer unit from the appearance of its transport.

On arriving at a locality recently occupied by the enemy, the scout should determine the kind of troops (infantry, cavalry, artillery, trains) from the tracks they leave. He should search for identifications such as insignia, characteristic articles of uniform or equipment, etc. A properly trained and fully observant scout can gather much information from tracks, etc., which would be meaningless to an untrained man.

OBSERVATION BY NIGHT.

The scout will see little at night and must depend chiefly on his hearing to obtain information of the enemy. As he moves he should stop every once in a while, and listen intently. The ability to listen for long periods in perfect silence must be cultivated, for it is as important in night scouting as observation by day.

During the war enemy outguards were constantly located by scouts who lay outside the enemy position and listened intently for the inevitable whisper, cough or movement, which disclosed their location. The trained scout who has a compass will always take a bearing on any sound made in the enemy lines at night, estimate the distance and make a note of it so as to be able to plot the position on his return.

The distance that an object can be seen at night is limited. But by getting the eye close to the ground and the object against the sky, it can be seen better.

Before starting on night reconnaissance the scout should have studied the terrain in which he will move, from day observation posts, from maps and airplane photographs. Compass directions to all prominent points should be noted in advance.

Practice should be had in accustoming the eye and ear to different impressions which objects and sounds make under night conditions. Estimation of distance by eye, and of nature, direction and distance of sounds should be practiced.

THE SCOUT PAIR IN ATTACK AND DEFENSE.

The duties of the scouts in attack are discussed in the courses in Musketry and Tactics.

When the opposing front lines are in close contact and highly organized because of long occupation, there occurs a state of deadlock, known as "stabilized warfare." The space between the opposing front lines is called "No Man's Land."

Facilities for observation and sniping are perfected and patrolling by day becomes very dangerous. Under these conditions the duties of the scouts are observing, sniping, listening, night patrolling and small raids. These are specialized duties, for whose proper performance actual experience is necessary. On an active front they are carried on continuously and aggressively. The purpose is to keep constant watch over the enemy, to gather information as to any changes in his defensive works, personnel or organization, from which his intentions may be learned, and to harass his troops. The operations are carried on by highly trained scouts.

Even in open warfare, however, scouts will frequently be called upon to act as observers and snipers, both in defense and frequently also in offense. They should be trained for such duties.

The scout pair as observers. In defense small observation posts are established along the entire line and as close to the front as the proximity and aggressiveness of the enemy permit. These posts are usually manned by a pair of scouts.

One scout, with field glasses, is observer, the other is recorder. As the duty is a strain on the eyes and nerves, the scouts should change places every 20 to 30 minutes. The pair should be relieved by a fresh pair every two to four hours.

Each post is given a sector or field of view to watch. The observer divides his sector into zones parallel to the front and searches these in succession with the naked eye as heretofore described. Localities which might be occupied by the enemy he studies with his glasses. If the post has been established for some time the ranges to important points in the foreground will be known and the post may be provided with a map of the field of view.

Whenever the observer sees any new object or any activity of any kind he causes it to be recorded. Everything seen is recorded. An apparently insignificant occurrence may be of great importance in the light of other information. The observer takes the bearing of the object or occurrence with his compass, and estimates the range. He calls this to his companion, who records it with the time.

The reports are sent to a designated officer at intervals. Matters of great importance should be reported at once, and for this purpose one or more men may be attached to the post as messengers: The report of an observation post should include:

- (1) The number of the post, and its location if necessary.
- (2) The date.
- (3) Names of scout pair responsible for the report.
- (4) The time of each observation.
- (5) Azimuth (or bearing) of each object or event reported.
- (6) Range (distance) of each thing reported.
- (7) A brief description of each thing reported.

An example of such a report is shown in Plate 242.

When a new relief enters a post the former occupants should give them any information which might assist them in their duties. The newcomers should carefully examine the reports of previous observation.

The posts must be carefully hidden. All unnecessary activity should be avoided. The men should never expose themselves to view, and should not make tracks to or near the post which might be seen on an airplane photograph. Trees and houses, or any other place which gives concealment and a good view may be used until something better is prepared.

The posts are less apt to be discovered by the enemy if no firing (sniping) is done from them. Each post should have sketches, maps, and when practicable, panoramas of the field of view. In case of a raid these are destroyed to prevent capture. Each post should have a signal pistol for giving the alarm in case of a raid or attack.

Listening posts. During darkness observation is impossible. Hearing must take the place of seeing, and the front of a position is covered by listening posts.

The precautions as to concealment necessary in the case of day observation posts are not so important for listening posts. They are usually placed in open ground, either on the surface or in pits which are covered with camouflage nets during the day.

streams and valleys which cross the route of march are especially useful. Finally if practicable, as it usually will be, the scouts should go carefully over the selected route by day.

When the march commences the scouts move in the indicated compass direction, in a straight line (except when following a route of travel) and checking direction frequently by any available means. They measure the distance traveled, and at the end of each bound locate the landmark before starting the next bound.

MESSAGES AND REPORTS.

A scout is the eye of his commander. It is the duty of every scout (or patrol leader) not only to *see* but to accurately report what he sees, and get the report back to his commander, which will sometimes be difficult.

As an individual scout will seldom be very far from the patrol or unit to which he belongs, he usually sends any information he has gathered by means of a *signal*, as "Enemy in sight," pointing to the place at which he has discovered the enemy, or firing tracer bullets. If the information cannot be sent by a simple signal the scout goes to his leader with it.

Messages and reports are part of the operations of a patrol, and are made by the patrol leader. But as any trained scout may be called on to lead a patrol, he should know how to write a correct message or report. An information patrol is sent out to gather information. No matter how skillfully and successfully it operates, all this will be useless unless the leader can *accurately* report what he has learned. A careless report may be worse than no report at all.

Few people can write a good message or make a complete and correct report. So it is necessary that scouts be trained in this duty.

Messages.

Messages are short notes which a patrol sends back from time to time during its journey. A report is a complete account of all that the patrol has learned, and is made by the patrol leader to his commander after the return of the patrol. Messages concerning very important matters are usually sent back at once. The final report of the leader should include everything in his messages as well as other things not important enough to have been sent by a special messenger.

The patrol leader should have a pencil and notebook and should keep a record of all messages, and of all information he gathers, so that he will forget nothing when he makes his report.

Information to be of value must generally be transmitted promptly. Accordingly patrols are usually made strong enough to send back messages. In a friendly country one man will usually be sufficient to carry a message. In hostile country, or if there is a reason to believe that the enemy is between the patrol and its own lines, two men are usually sent, each having a copy of the message. The patrol leader will tell the messengers what route to follow.

Two messengers may return by separate routes, or together. If together they move as a two-man patrol, so separated that at least one should be able to escape in case of an unexpected attack. Messengers do not rejoin the patrol.

The first certain information of the enemy should always be promptly reported, a messenger being sent back. Thereafter it will not be necessary to report every patrol seen, as the commander will be already aware that there are hostile troops in the locality. The next information of value will usually be the presence of a considerable force of the enemy, or information that a certain locality is occupied in force. Any information which it is a part of the patrol's specific mission to obtain, should generally be promptly transmitted by messenger. Other information, less urgent, is reported by the patrol leader upon his return.

Form and Contents of Messages.

Messages may be a simple signal, or an oral or written message carried by a messenger. Verbal (oral) messages are generally used for short distances, and very

simple messages. They are usually employed during combat. The messenger should be able to tell where the message came from and to answer questions about it. Verbal messages cannot fall into the hands of the enemy. But they are very apt to become distorted, especially if they are passed on by word of mouth. So a verbal message should generally be on one subject, a single sentence, only. More complicated messages should be written, especially when they must be sent a long distance.

The man who carries a verbal message should repeat it to the patrol leader, and the leader may question him to make sure he understands it. The messenger should read a written message, and it should be thoroughly explained to him. He can then answer questions, and if the message is lost he can still deliver a verbal message. It will be well if the messenger himself has been a witness of the events described. He can then answer questions. In a small patrol this will usually be the case.

Messages should include such simple sketches as necessary to make them clear.

Messages are more apt to be accurate if made in a systematic way, according to a form. And so it is required that messages be so prepared, with a *heading*, *body* and *ending*. The items included in the standard message form are as follows:

1. *The serial number of the message (or title of the report.)* Where several messages are sent by a patrol they should be numbered in order, for identification, and so that the commander may know whether any are missing. When a single complete report is made by a scout or patrol upon returning, it should be headed "Report of _____."

2. *The place from which the message is sent*, so described that it can be located on the map by the person who receives it. If this be some definite point marked by a conspicuous feature, it is so described, thus: "church at junction of REESVILLE-LOWELL roads;" "Observation Post No. 3;" will be sufficient (if this is a post whose location is known to the receiver). If the location is at no definite point it may be identified by reference to one or more conspicuous points in its vicinity, viz.: (a) The distance and direction from a single prominent point, as: "In wheatfield, 500 yards N 30° E (Azimuth 30° from junction of REESVILLE-LOWELL roads. (b) The direction from two prominent points, as: "N 30° E from junction of REESVILLE-LOWELL roads, N 65° W from bridge over SILVER RUN on LOWELL road."

The scout estimates the distances (See Range Estimation, Musketry) and takes direction with his compass. Hence the bearing (or azimuth) will be the *magnetic* bearing (or azimuth), and is always so understood.

The position may best be located by a simple sketch, on the back of the message, giving the direction and distance from the scout's position to one or more prominent objects, by means of which the location may be plotted on the map. See Plate 243.

3. *The date and hour at which the message is sent*, as: "July 30, 1922—4:30 PM."

4. *The name of the person to whom sent*. The message is usually sent to the officer who dispatched the patrol. To insure proper delivery it would appear to be wise to include his rank, organization and location, thus: "To Lt A. B. Jones, Co A 1st Inf, CLAREMONT." But

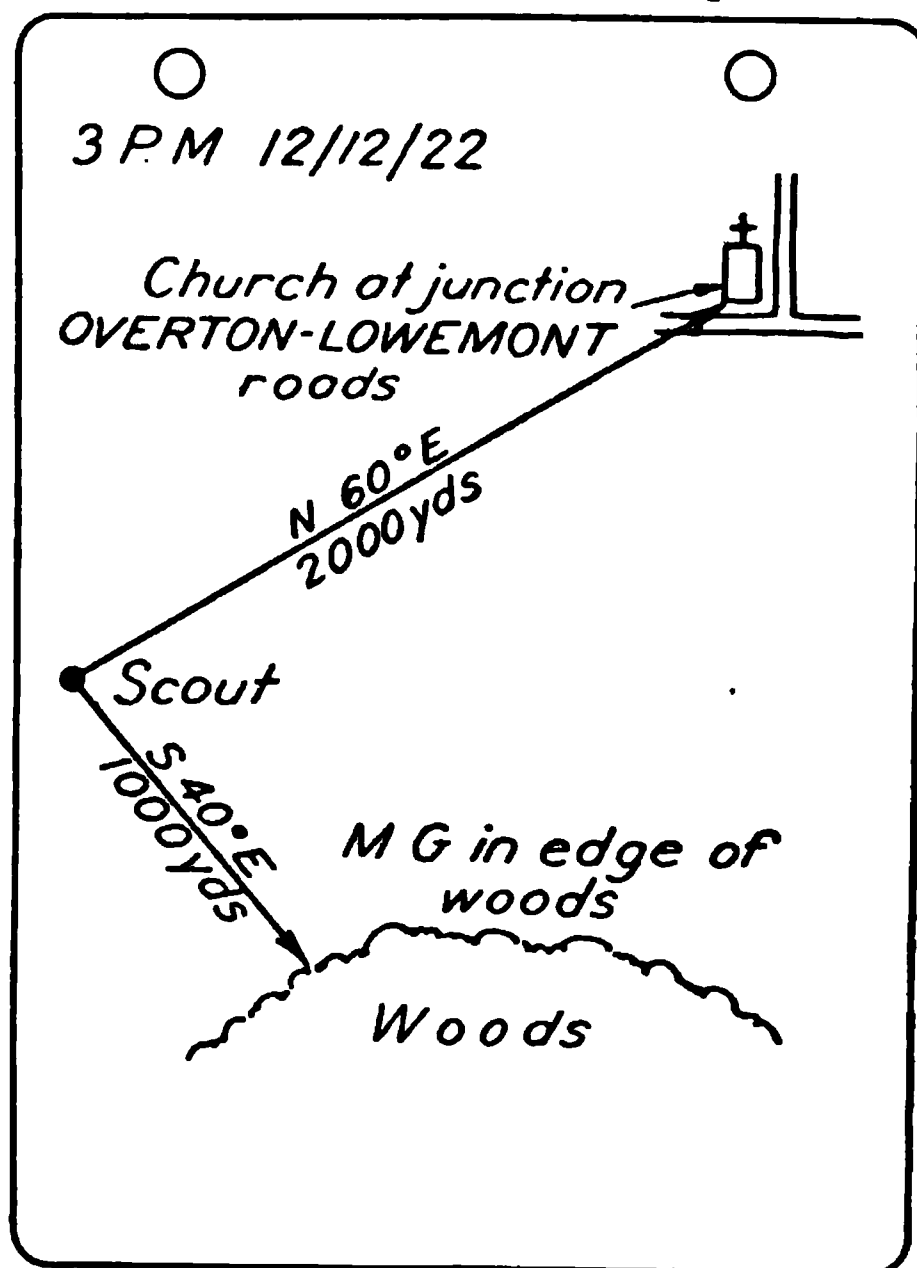


PLATE 243.—Location Sketch accompanying a Message.

should the message be captured this would convey information of great value to the enemy. If there is any chance of the message falling into his hands, it should be addressed simply, "To Lt Jones," or "To CO." The messenger is informed as to just who the CO is, and where he may be found or where the message is to be taken. If it be necessary to relay the message, the messenger should write on it (upon delivery) the name, rank, organization and location of the officer for whom it is intended. If there be any doubt as to the destination of the message it may be delivered to any officer or headquarters, with a report by the messenger as to where it came from, etc.

Following the name of the person to whom sent, should be the manner of transmission: "By runner," "By motorcycle," "By telephone, from," etc.

Items 1, 2, 3 and 4 form the heading of the message.

5. *A description of the objects or events which form the subject of the message.* The body of the message should include a brief but clear description of the objects or events reported. The leader should not report as a fact or as his own observation something he has learned by hearsay, but important information from any source should be reported. An unqualified statement is understood to mean that the sender of the message is personally aware of the facts related. If this is not the case, the message should show clearly the source of the information, as: "Pvt Jones saw," or "A local farmer states," etc. Objects or events should be described in correct military language.

6. *The exact locality at which an event occurs or an object is seen.* The necessity for this will be evident.

The scout furnishes this information by giving the estimated range in yards and the compass bearing (azimuth) from his own position to the object or locality reported. Often a sketch may be used to advantage. Important locations may be shown on the same sketch as that indicating the position of the patrol.

7. *The time at which an event occurs.* Usually this will be the same or nearly the same as the time at which the message is sent, but there should be no room for any doubt. Thus the report may state: "Just now," or "About 5 minutes ago," etc. (meaning 5 minutes prior to time stated at head of message), or the exact time of the event may be given. The time at which some event occurred is always of great importance. For example: One scout may report a regiment of hostile infantry on the march at a certain locality. Another scout makes a similar report from a different locality. Unless the times of these observations are stated, the officer receiving the reports has no means of knowing whether the *same* regiment was seen by both scouts.

8. *A résumé of previous messages.* This item should ordinarily be unnecessary. But if the sender of the message has any reason to fear that previous important messages may not have been delivered he should include in each message a résumé of the most important information in previous messages.

9. *A statement of the next move of the scout or patrol.* This will usually be a remark such as, "Remain in observation," or "Continue on mission." If the patrol is forced to abandon its mission, or if it adopts some alternative, this should be told to the commander. If there is any danger that the message may fall into the hands of the enemy, it should contain no information which might lead to the capture of the patrol. Thus, "I continue to LOWELL," would give the enemy (if the message were captured) information of the route of the patrol, as the place from which it sent the message would also be given. If Lowell were the place to which the patrol was directed to go, "Continue on my mission," would convey the same information to the commander, and no information to the enemy.

Items 5 to 9, inclusive, form the body of the message.

10. *The signature and rank of the sender.* The message concludes with these. The scout should print his name under his signature so that there may be no doubt as to his identity. His organization should not be given, as this is unnecessary, and would give valuable information to the enemy if the message were captured.

It will be seldom that any one message will include all of these items. Any which are not applicable are omitted. Thus the message of a scout may be firing tracer bullets at an enemy he has located. This single action includes most of the items we have listed. The message is sent to his section or platoon leader. The location of the scout, the date and hour, the identity of the scout, what he sees and its exact location, will all be apparent to the leader who observes him firing.

Messages should be written in a brief, compact style, somewhat similar to "telegraphic" language, but they must be perfectly clear. Military language should be used.

The items should follow the sequence given. Names of localities should be in CAPITALS, and the authorized abbreviations should be used.

Messages may be written on regular blank forms or on a sheet of paper torn from a notebook. Sketches should be placed on the back of the same sheet.

In order to write a correct message or report the scout must be familiar with the features of the terrain, and their usual names. He must know how to estimate distances, how to tell direction, how to make a simple sketch. It is desirable that he know how to read a map. All of these should be included in scout training. Practically every order that a scout receives has in it some reference to the terrain, and the usefulness of nearly every message depends upon a proper understanding of terrain nomenclature.

Instruction in terrain nomenclature is included under Target Designation in the course in Musketry. The manner of estimating ranges is also included in Musketry. The message shown in Plate 244 is very poor. It would convey more valuable information to the enemy, should it fall into his hands, than to the officer for whom it is intended. Plate 245 shows how the message should be written.

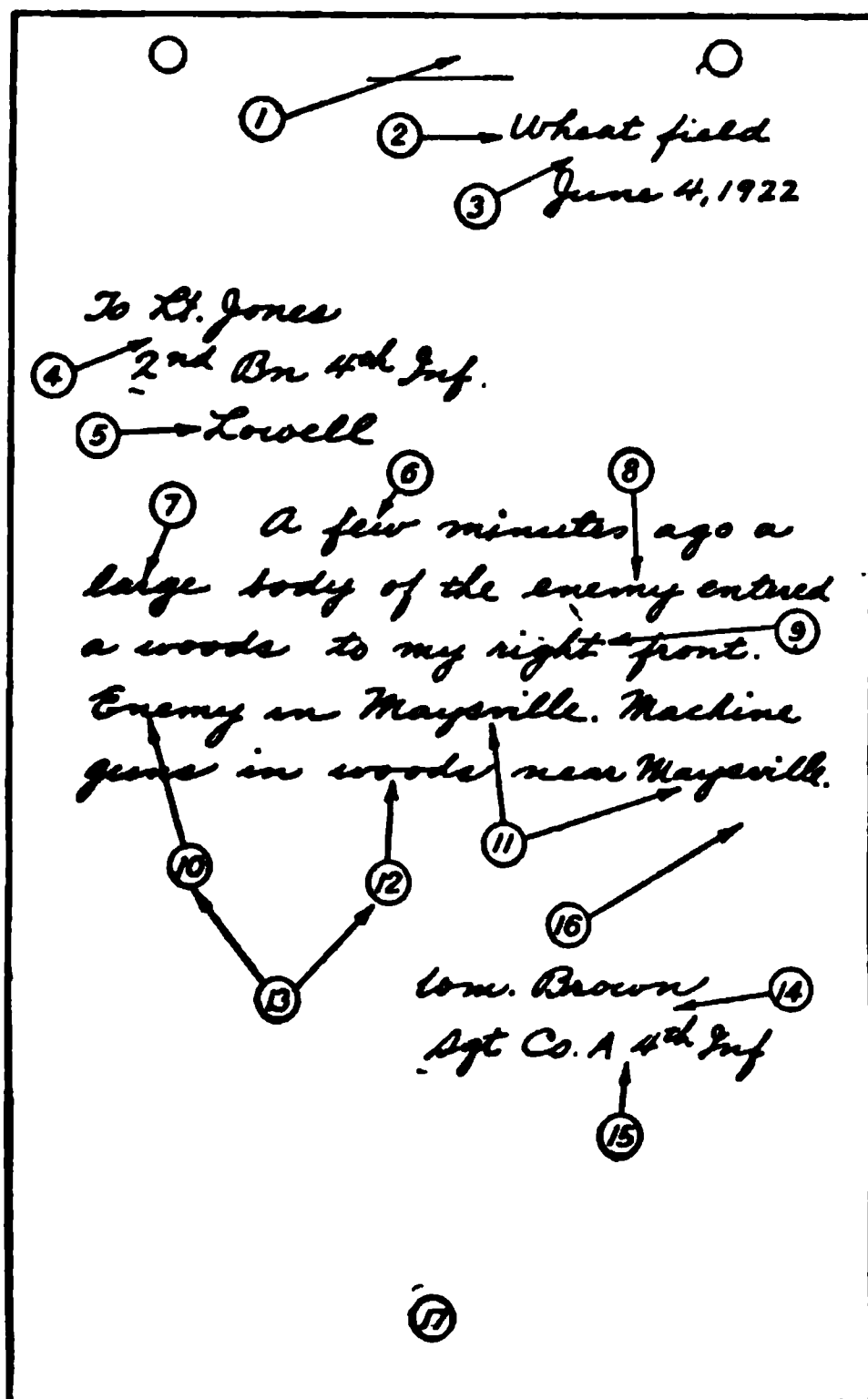


PLATE 244.—A careless Message showing many common Mistakes.

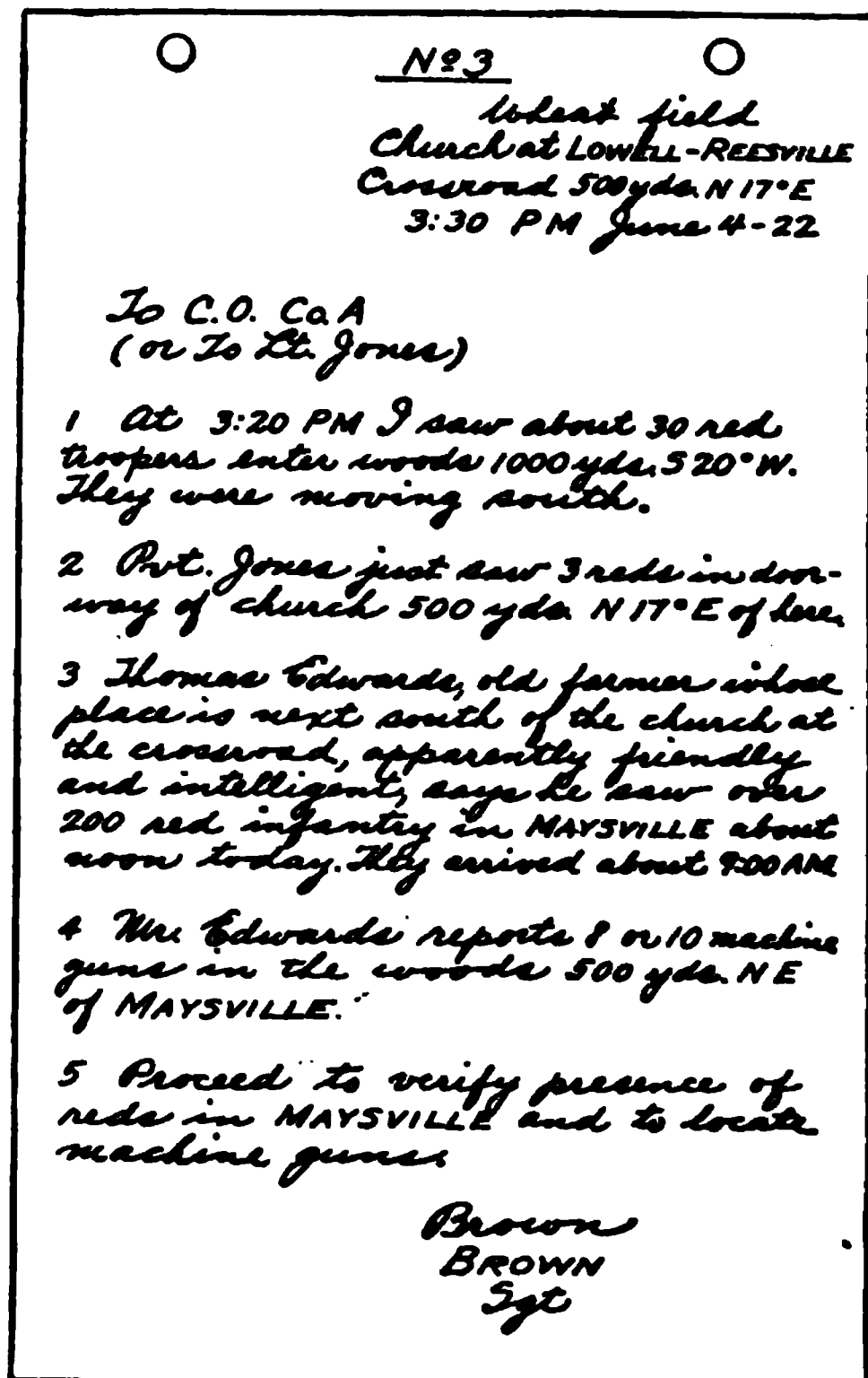


PLATE 245.—How the Message in Plate 244 should have been written.

1. What is the number of the message?
2. Where is this wheat field?
3. At what time was the message sent?
- 4-5. The enemy might send many patrols and spies to learn that the 2nd Bn 4th Infantry was in Lowell. This information is too important to risk giving it to the enemy by the capture of the message.
6. How many minutes, and from what time?
7. How large a body?
8. What kind of troops? In what direction were they moving?
9. Where are you and where are these woods?
10. How many enemy and what kind of troops in Maysville?
11. Names of places should be printed in CAPITALS.
12. Where are these woods, how close to Maysville and in what direction?
13. Where did you obtain this information?
14. Name should also be PRINTED under signature.
15. Same as 4-5.
16. What will you do next?
17. A sketch or two would help greatly to elucidate this hazy report.

Patrol Reports.

Upon his return from a patrol the leader should make a report to his commander. The report is usually written. It covers in detail the following points:

- a. Size of patrol.
- b. Name of leader.
- c. Mission.
- d. Time of departure.
- e. Route.
- f. Number of enemy seen. Kind of troops. Where seen? Actions.
- g. The attitude of the enemy. (Alert or careless.)
- h. The condition of the enemy defenses (wire, trenches, etc.).
- i. General character of the ground passed over.
- j. Route of return.
- k. Time of return.
- l. Condition of patrol. (Casualties.)
- m. Any other information of importance.

The officer who sends out the patrol will transmit such reports to his next superior.

Example of the report of a day patrol. The following is an example of the written report of a day patrol.

Report of Patrol No. 1. Co A, 4th Inf.

To C O Co A 1st Inf.

Strength. Five men.

Leader. Corp A.

Mission. Reconnoiter co zone of action to village of ELLIS inc.

Time of dep. 1:52 PM June 12.

Route. Down SHELL CREEK to junction, up branch creek to edge of woods, to ELLIS and return.

Time of ret. 6:20 PM.

Information reported. SHELL CREEK fordable. Woods unoccupied. Limit of visibility, 40 yards. ELLIS unoccupied but signs of recent departure of enemy. Houses intact, water supply destroyed. Bridge over SHELL CREEK on road to ELLIS, strong steel tr., roadway 16 feet, 10 feet above creek. In good condition.

Enemy seen. Trooper and four horses near bridge, 2:20 PM. Mtd patrol, four men passed through ELLIS 3:55 PM. One scout in woods south of town, 5:45 PM. Captured, with message (herewith).

Remarks. One written message, forwarded from ELLIS 4:00 PM, received 4:45 PM. Sent to C O Co A with hostile insignia and scrap of order.

Prisoner and message found on his person forwarded herewith. No casualties.

A, Corp,
Co A 1st Inf.

1st Plat., Co. A,
7:30 PM, June 12, 22.

PATROLING.

Introduction.

We have seen that there are two kinds of patrols, known as *information* (or *reconnoitering*) patrols, and *security* patrols. Security patrols are those used to cover and protect troops on the march or during combat. The tactics of security patrols is discussed in the course in Tactics. The pages which follow have to do with the tactics of information or reconnoitering patrols.

A reconnoitering patrol is a small detachment or group of men sent out for the purpose of gathering information, usually concerning the enemy.

DAY PATROLING.

Number, strength, leaders, etc. of patrols. The commander who sends out patrols will decide the number of patrols to be sent, the strength of each, the general direction and the distance to which each patrol is to go, the time it is to start and when it shall return, and the mission of the patrol, or exactly what it is to find out. He will also designate a leader.

The strength of a reconnoitering patrol will depend on how far it has to go, what it has to do, and the resistance it may meet. Usually a patrol should try to avoid a fight with the enemy, but sometimes it may have to fight to accomplish its mission. A small patrol is less apt to be seen than a large one. If messages are to be sent back enough men must be attached for this purpose. If in hostile country, or if there are enemy patrols around, it will usually be wise to send two men with each message, giving each a copy.

Accordingly a patrol may vary from 2 or 3 men to a company. Less than 5 men is usually too few to allow sending back messages. More than 10 are difficult to conceal. So a reconnoitering patrol will generally have from 5 to 10 men. It should *never* be any larger than necessary.

The rate of march of infantry on the road is $2\frac{1}{2}$ miles per hour. A patrol must often move across country, and often halt for observation or concealment. So it can seldom travel faster than 2 miles an hour. This should be remembered in deciding how far to send the patrol. Thus if it is sent a distance of 4 miles it will be *at least* 4 hours before it returns, and perhaps longer. At night the rate of travel will be much less.

The leader of an important reconnoitering patrol would usually be a selected officer or non-commissioned officer. But every non-commissioned officer should be able to lead a patrol.

The equipment of the leader and members is discussed elsewhere.

PLANS OF THE PATROL LEADER.

Selecting a route. Having received his orders the patrol leader makes his plans for carrying them out. His first step should be to obtain or at least see a map of the terrain he is to visit.

He should now state his mission to himself, for example: "I am ordered to go to X—, and find out if any hostile troops have been there since Wednesday afternoon." His mission will tell him *where* he should go, and the patrol leader then proceeds to select his route from the map.

He draws on the map a straight line from the place where he is to the place where he wants to go. This will be the shortest route, but usually not the quickest or safest. He now looks for *actual* routes near this line. Often there will be several, and the patrol leader considers the advantages of each, as follows:

a. *Is the route short*, that is, does it lead directly to the destination? Other things being equal the shortest route is best.

b. *Is the route along the roads?* It is easier to travel on the roads than across country, both because walking is easier, and the route is more easily followed. But on the other hand the patrol is more apt to be seen either by the enemy or by the hostile inhabitants. An unfrequented country road may be better than a main highway for this reason. Sometimes it may be well to follow the main road

during the first part of the journey, if the enemy is not apt to be met, leaving the road for a better concealed route as the danger of being seen increases. An infantry patrol can go anywhere. It can leave the road and take to the fields or woods whenever it seems wise to do so.

c. *Is the route easy to follow?* The roads are usually favorable in this respect, especially for a long journey. Even on the roads, and particularly when the route is partly or wholly across country, there should be some good landmarks to guide the patrol, such as villages, prominent hills, or other natural or artificial objects that are easily seen. The leader can usually select a few such landmarks from the map. In any case he picks them out as he goes along, and uses them as guides in each bound of his advance.

d. *Does the route afford concealment?* If the enemy is active and known to have patrols out, concealment is a matter of great importance. Often it will be wise to abandon a short and easily traveled route for a more roundabout route which is better concealed. Woods, ravines, standing crops, etc., are favorable for concealment. A diversified or broken terrain is always more favorable than one which is flat and open. (See Concealment, under Scouting).

e. *Does the route afford good observation?* For his own safety, and also for the accomplishment of his mission, the patrol leader will wish to halt and observe the terrain at various places along his route.

By considering all these matters the leader will be able to select a good route for his journey.

He next decides on some of his more important bounds, or halting places. These should be at points where he can obtain a good view of the country. It will not always be possible to pick these from the map. More frequently they are selected on the ground as they will depend greatly on small local features which are not shown on the map.

In like manner the leader selects *rendezvous*, that is, various localities at which the patrol could re-assemble in case it should be scattered by the enemy. These should be places which the men can easily find. They should be near, but not *at* some prominent landmark, for example: "the small wood 500 yds. east of the village of X—."

The leader also selects a route for his return. It may of course be easier to come back over the same route. But if the leader sees a number of hostile patrols on his way out, and especially if they see him, it may be wise to return by a different route, and he should have one in mind.

The route may be given, in a general way, in the orders to the patrol. But even in this case the leader should carefully examine the map and decide whether there are any places where it might be wise to leave the route for a time.

If he cannot take the map with him the leader should make a sketch, or better a tracing of the map on a thin piece of paper. This sketch should show the route, the length and direction of each part of it, the positions and descriptions of any prominent landmarks that may be used as guide points, and any localities selected as stopping places.

To use a map in this manner a patrol leader must be able to *read* it. He must be able to:

1. Orient the map, that is make the meridian on the map or any other line on the map parallel to the line on the ground which it represents.
2. Determine his own position on the map.
3. Determine the *direction* and *distance* from one point to another.
4. Interpret the ground forms, that is, distinguish the hills from the valleys, tell how high the hills and how steep the slopes, etc., etc.
5. Solve "visibility problems." It is frequently desirable to know whether the patrol at a certain point could be seen by an enemy at another point, what ground is visible from a certain observation point, etc.

The way to solve these problems is explained in the course in Map Reading.

Orders given to the leader. The orders to a patrol leader are generally given verbally by the officer who sends him out. They should be very clear as to just what information is desired, but should not go into details of the conduct of the patrol. In other words the patrol leader should be told exactly *what to do*, but not *how to do it*. Usually a patrol should be given a single, definite mission, thus: "Proceed to X —, and find out if there is any enemy there." If too many things are asked of it the patrol may fail to do any of them thoroughly. If there are several missions to be carried out it is usually well to send a patrol for each.

The orders to a patrol leader should include the following:

1. Information of the enemy and friendly supporting troops.
2. Plan of the commander sending out the patrol.
3. Mission of the patrol—explain very carefully exactly what is wanted.
4. Size of the patrol and where men are to be obtained.
5. Furnish patrol leader with a map if he has not one already.
6. General route of patrol and hour of departure.
7. Limits of the country it is to observe, and location of other friendly patrols.
8. Time patrol is to return, and if necessary latest hour by which first message should be back.
9. When and where messages are to be sent.
10. Location of Blue (friendly) outposts.
11. Contemplated movements of the command during patrol's absence, if any.
12. Cause patrol leader to set his watch with commander's.
13. Answer any questions the patrol leader may ask.

Organization and Formations.

The leader next decides on the organization of his patrol and the probable formations for different parts of his route. But his actual formations will usually be decided on the ground itself.

A patrol is organized like any other body of troops on the march. That is, it includes a main body and covering detachments. Because the patrol is a small body and usually exposed in every direction, the covering detachments may include an advance guard, flank guards on both sides, and a rear guard. These detachments may be represented by only one man, or in a very small patrol one man may act as both advance and flank guard, etc. But the duties in any case are the same. If a patrol has only two men, one acts as point, the other as leader, right and left flanker and getaway man.

Duties of individuals. The main body of the patrol includes men for combat, for sending messages, and for replacing other elements of the patrol in case of casualties.

The men assigned as advance, flank and rear guards, observe to the front, to a flank or to the rear. One man or one group observes in each direction. The rear-most man of the patrol is the "getaway man." He has the particular duty of escaping and conveying information to the rear if the patrol is surprised and captured or dispersed. In case of combat with a hostile patrol he takes no part. Each of these individuals is given a single definite duty, to observe in a given direction and report anything of importance that he sees.

The advance guard or point precedes the patrol and the rear guard or getaway man follows. The flank observers may be placed on the flank, usually if the patrol were moving across country. But if it is marching on the road it would be delayed by flankers moving across country. In this case the men charged with observation to the flank may remain on the road with the rest of the patrol, next in rear of the point.

These observers are the eyes of the leader. He himself constantly observes the terrain in all directions. But he cannot watch the entire horizon at once, he has other duties such as giving orders, consulting his map, taking compass bearings, making notes, etc., so other men are charged with observation in various directions.

The leader goes wherever necessary. Usually he will be near the center of his patrol or a little in advance thereof.

One member of the patrol is designated as second in command.

The leader selects the men to perform the duties of observation and "getaway."

The combat members of the patrol including automatic riflemen and rifle grenadiers, if any, are in the center of the patrol, near the leader and under his control. They take advantage of available cover to keep concealed. The men for messenger duty, who are also available for combat, are also near the leader.

Distances and intervals. A patrol should never move in a bunch, that is, with the men close together. Observation will be better if the point is out in front and the flankers out to the flank. The greater the distance over which the patrol is spread the less it can be hurt by hostile fire and the less the chance of all members being captured in case of an ambush. But the distances separating the members must not be so great that they cannot easily communicate with each other or be controlled by the voice or signal of the leader. Since one man, the leader, should personally command the entire patrol, the distances separating the various elements should not be much greater in a patrol of 12 men than in one of half that number. These distances will vary with the terrain, the closeness of the enemy, the visibility (light or darkness). At night, or in very close country, they are less than in open country in daylight. Ordinarily in the daytime a patrol of 8 or 10 men will cover a road space of not less than 100 yds. or more than 250 yds., averaging 150 to 200. In a very small patrol of course the total distance would be less, for example 30 to 50 yds. and up. In a dense wood or at night distances are greatly reduced. At night the entire patrol may be within a radius of 5 yds. from the leader, or within whispering distance.

The distances between the members of the patrol should permit of observation, reduce danger from hostile fire, permit control, and favor the escape of at least one man in case of attack by the enemy. If the members be too close together they can see no more than one man, and would be vulnerable to attack. If too widely dispersed control is difficult. The distances should be such as to allow visual and easy verbal communication between adjacent men, and the leader should occupy a position from which he can control the conduct of his men. The patrol should never be separated for more than a very short period. The distances between adjacent members will usually vary from about 10 to about 30 yards, depending on the terrain and time of day.

The actual formation of the patrol at any time will be decided by its mission, the country, proximity of the enemy and time of day. The leader adapts his formations to the situation, avoiding crowding on the one hand and too great separation on the other. The smaller the patrol the greater will be the mistake of dispersing it. A small patrol should not be divided into two or more smaller patrols. If more patrols are needed they should be sent out in the first place.

Equipment. The patrol leader next decides on the equipment he and his men will carry. The less they have the more easily they will travel, and so they should carry nothing except what is necessary. As an infantry patrol will seldom be out over 12 hrs. packs can be left behind. If it is to be out over 6 hrs. a cold meal should be carried by each man. Filled canteens should be taken, except for a short journey in cool weather.

Rifles should be taken, except that in some cases night patrols carry pistols instead. Bayonets and scabbards are unnecessary. Clothing should be as light weight as the weather allows. Steel helmets should not be worn.

All means of identification such as collar insignia, stenciled equipment, etc., and all maps, letters or papers which might give information to the enemy, should be left behind.

In addition to the equipment of other members the leader should have:

1. Compass.
2. Watch.
3. Field glasses.
4. Map or sketch.
5. Wire cutters.
6. Pad or notebook and pencils.

Control. Commands and signals. The leader controls his men by the authorized arm signals described in Infantry Drill Regulations or by short and simple verbal commands. He uses the regular commands of the drill regulations whenever possible. The signals are preferred when the patrol is separated by the maximum distances, or when the presence of the enemy makes it dangerous to use spoken commands. The same signals are used by members of the patrol in sending information to each other, or to the leader. All soldiers should know these signals. In signaling a man faces those for whom the signal is intended. A signal is acknowledged by repeating it back. The number of signals should be small. In addition to those given in drill regulations the following may also be used.

1. *Enemy in sight.* Hold the rifle horizontally above the head, *Enemy in sight in large numbers.* Same. Raise and lower the piece several times, rapidly.



Enemy in Sight.
Have important information.
Fix Bayonets.

PLATE 246.—Arm Signals.

2. *Have important information.* Extend both arms laterally.
3. *Fix bayonets.* Go through the motion of fixing bayonets.
4. *Put on gas masks.* Go through the motion of putting on mask.
5. *Report to me.* A beckon, or signal, "Come here."
6. *Observe in your direction.* The leader cups his hands and places them to his eyes like a binocular.

The members of the patrol should frequently look toward their leader for signals.

Action of the patrol leader before the start. Having made his plans the leader selects the men for his patrol or assembles the men who have been detailed. He tells them of the duty, the equipment, and the time and place of assembly for the start, unless this is to be made at once. He arranges for a cooked meal, ammunition and any special equipment necessary.

The patrol being assembled the leader inspects it. He notes the following:

1. Whether all men are physically fit for duty.
2. Whether each man is wearing the prescribed uniform and carrying the prescribed equipment, including filled canteens and a cooked meal, if ordered.
3. Whether any man is carrying any unnecessary equipment. This he requires him to leave behind.
4. Whether any equipment glistens or rattles. Equipment which is defective in these particulars should be replaced.
5. Whether any man is carrying any letters, maps or documents which might be of value to the enemy if captured. Any such should be discarded. It will usually

be advisable to remove any collar insignia which would enable the enemy, if he captures anybody, to identify the organization to which the patrol belongs.

Having satisfied himself that his men are ready for the duty, the leader explains the mission of the patrol. He tells them what is known of the enemy and so much of his own plans as necessary to insure their intelligent co-operation. With the aid of his map or sketch the leader points out and describes the route of the patrol, and the important features along the route. He designates a second in command, and assigns to each man his position and duties within the patrol. He explains where messages sent back by the patrol are to be delivered, and to whom. He rehearses with his men the signals to be used.

He reports to the officer sending out the patrol, informing him of the route and his plans. He leaves with the proper authority a list of the men composing the patrol as a means of checking casualties (missing).

CONDUCT OF THE PATROL.

All the rules for individual movement and the use of cover, and other matters of personal conduct described under Scouting, apply at all times to the members of a patrol. The principles which guide the conduct of a patrol are nothing more than applied common sense.

Advance by bounds. A patrol seldom moves continuously. It usually advances by "bounds" in much the same way and for the same reasons as an individual scout. From one covered position the terrain to the front is carefully searched and another position selected, with the best route to it. If all is clear the patrol moves rapidly to the new position, where the process is repeated. In the presence of the enemy the advance is made cautiously, usually one or two men at a time move rapidly to a new position, the others watching and covering their advance.

The limits of a patrol's bounds in the advance by bounds, may be determined by:

(a) A change in direction, making it necessary to halt and determine a new direction, select new guiding points, etc.

(b) Arrival at some important landmark, where the leader can verify his position and lay the course of his next bound.

(c) The beginning or end of a stretch where the patrol is greatly exposed to view, as leaving or entering a wood, leaving a ridge which has afforded concealment, etc.

(d) A change in the terrain calling for a change in formation.

(e) Arrival at a point favorable for observation, where it is advisable to halt.

(f) Encounter with the enemy. If he is seen or his presence suspected, the patrol should halt, take cover, and observe before proceeding.

(g) Arrival in the vicinity of some dangerous locality which should be reconnoitered before the patrol passes through or beyond it.

Halts are made in localities affording concealment and favorable for observation.

Approaching a suspicious locality. In approaching a locality where the enemy might be such as a wood, house or inclosure, one or two men, usually the point, investigate while the others remain in concealment ready to cover them with fire. If the locality is occupied the enemy will thus be unable to kill or capture more than one or two men. If no enemy is present the remainder of the patrol advances. The entire patrol should never be exposed to fire or capture.

Crossing an open space. On reaching a locality affording little or no cover the patrol halts in the last covered position. Here the leader examines the terrain to the front, picks his next halt and the route and notes any localities which might be occupied by the enemy. One or two men then move across the open space to the next covered position. Having investigated the locality they signal: "Forward." The rest of the patrol then advances one at a time if necessary.

Moving up a valley. In moving up a valley the patrol takes a staggered formation, keeping close to the sides of the ravine, using the best cover available. If the enemy is near, one man moves at a time, the others covering his movement.

Approaching a skyline or crest. On approaching a crest, especially a skyline, one man approaches the crest at a place when a depression, a rock, or bush affords

concealment, and carefully looks to the front. If no signs of the enemy are observed he signals: "Forward." The patrol crosses the crest rapidly, one man at a time.

Approaching and reconnoitering a building. The patrol takes positions at safe distances, from which it can observe at least two and if possible all sides of the

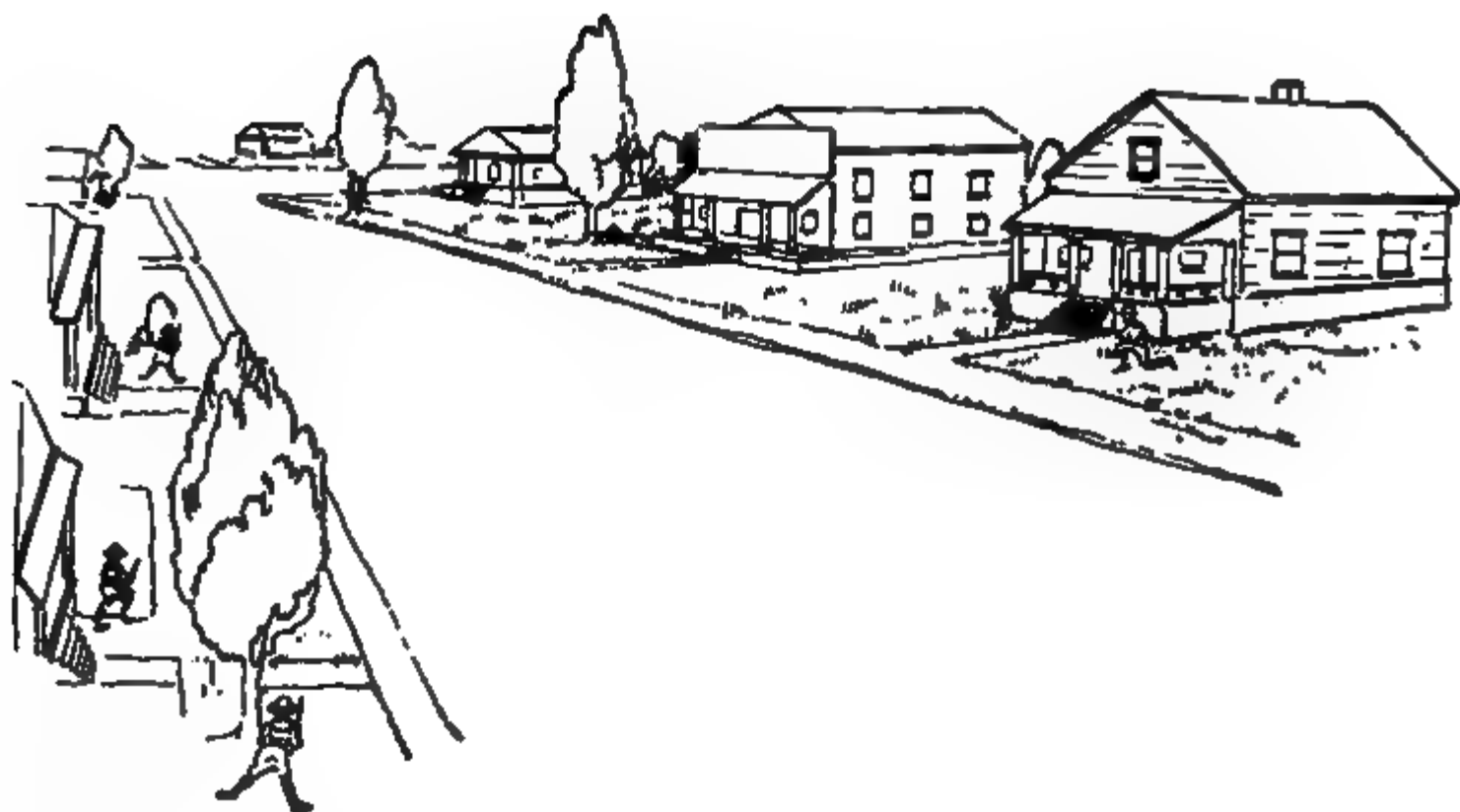
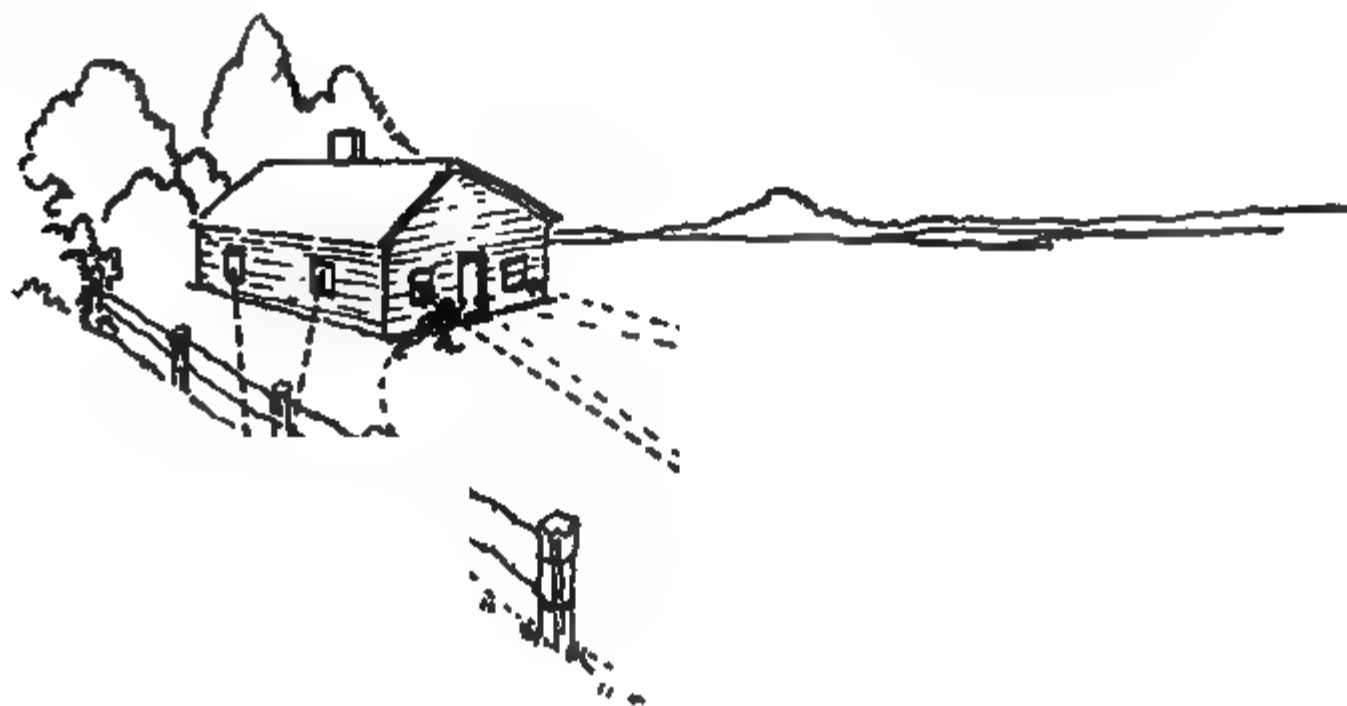


PLATE 247.

building, and the terrain nearby, and watches the doors and windows to learn whether the building is occupied. One or two men then work their way towards a side of the house which is under observation. The man who is to enter does not advance directly to the door, but gains the shelter of the wall and approaches the door from the side, being careful not to expose himself to fire from the windows. On reaching the door he jumps in quickly, with his rifle ready.

Crossing a bridge or ford. Stream crossings are very apt to be observed by the enemy. Approaching the crossing the patrol halts under cover and observes it as well as all possible enemy positions nearby. One man of the point then crosses the bridge at a run and takes a covered position. From here he again carefully observes the terrain, and seeing no signs of the enemy, signals: "Forward." The patrol crosses rapidly in single file with distances of 20 yds. or more.

Approaching a wood. A wood is approached in the same way as any other suspicious locality. The patrol halts under cover where it can observe the edge and fire upon it. One or two men then move toward the wood and reconnoiter its near edge. Finding no signs of the enemy, they signal: "Forward."

Passing through and reconnoitering a wood. If the patrol is to pass through the wood it advances in single file, or with flankers close in. If it is necessary to reconnoiter the wood on a broad front the patrol advances in a thin skirmish line, the interval between men being such that each see his neighbors on either side. Care must be exercised that each man maintains constant visual contact with the man next to him towards the center of the line.

Passing through a village. A small patrol should stay out of villages, unless ordered to reconnoiter them especially in hostile country. It is better to pass around. If necessary to pass through the patrol moves on one street, preferably the continuation of the road by which it entered. Half of the patrol moves on each side of the street, the leading man on each side observing to the front, and all watching the buildings opposite them on the other side. The advance is made by bounds. When the leading man on the right side moves forward, the man next in rear of him and the leading man on the opposite side halt and cover the doors and windows on both sides. The leading man on the left then advances similarly, after which the remainder close up a man at a time. When the leading man on either side reaches a cross street he halts on the near side and carefully observes the cross street in both directions before proceeding.

If it is reasonably certain that there is no enemy in the village, the patrol may move continuously along the street, but each man should watch the houses opposite him.

Reconnoitering a village. If it be necessary to reconnoiter the village instead of merely to pass through it, a part of the patrol remains outside while the others reconnoiter street by street as just described. The patrol in the village must not become separated by attempting to reconnoiter too large an area at one time.

Security during halts. A patrol when halted for observation or for any purpose, must protect itself from hostile observation and from surprise attacks. The locality for the halt should be one that can be approached under cover, it should be favorable for observation and concealment with a good covered line of retreat. All men should conceal themselves. The men detailed to observe to front, flanks and rear, continue to perform this duty during halts. When necessary they may move short distances to occupy convenient lookouts. The leader takes the most favorable position for observation to front and flanks.

Rendezvous. From time to time the leader points out to his men a rendezvous or place of assembly in case the patrol is dispersed. The locality should be far enough to the rear, and one that is easily found. Only one such point should be designated at a time. Having reassembled his patrol or a part of it, the leader again proceeds on his mission.

Encountering the Enemy. Combat.

The most skillful patrol leader is one who finds out all he wants to know, and returns without being seen by the enemy. If the enemy discovers the patrol he may capture it or drive it off, and prevent it from accomplishing its mission. If the leader has been ordered to "look for signs of the enemy" he will investigate all places on his route which might be occupied. If he has been ordered to go to a certain locality and *there* look for signs of the enemy, he will give a wide berth to all intermediate points which might be occupied. He will be careful to keep concealed in passing or investigating all suspicious localities.

Fighting with the enemy is not the duty of a reconnoitering patrol, and should not be done except when plainly necessary or unavoidable:

a. In self-defense, to avoid capture when concealment is impossible. If attacked by superior numbers the patrol will usually scatter, to reassemble at the rendezvous, and resume its advance by a new route.

b. When necessary to gain information, or to escape with information gained.

c. In exceptional cases to capture prisoners when it is quite probable that important information may thus be gained. The mere killing or capturing of the enemy is not part of the mission of a reconnoitering patrol.

In any case the leader must ask himself whether his chances of accomplishing the definite mission assigned him will be increased by getting into a fight. Usually the answer will be "No."

If a scout or member of a patrol is captured he should have no messages, maps, papers, letters, etc., which would give information to the enemy. There should be no collar insignia telling of his organization. If questioned he should absolutely refuse to answer, except to give his own name and rank (but not his organization). Any statement he makes may give the enemy information, and so he should keep his mouth shut. An efficient scout should be hard to capture.

Interviewing prisoners and inhabitants. Prisoners are a good source of information, and are often taken for this reason. If the patrol captures any prisoners they should be examined promptly before they have a chance to decide on a "story" to tell. They are later handed over to the intelligence personnel. They should be searched for maps, messages, etc.

Patrol leaders are authorized to arrest civilians if necessary. They often talk to the local inhabitants. It is better to encourage both inhabitants and prisoners to talk, rather than to ask too many questions, which may make them suspicious. Hostile inhabitants are of course apt to keep silent or else to make false statements. Friendly inhabitants are anxious to give information, but too often they tell more than they know. So both are unreliable, and their statements should be taken for what they are worth and not as *facts*. Women and children will usually talk most.

Inhabitants (and prisoners) interviewed should be kept apart and talked to *separately*. If several of them then tell the same story it *may be* true, or at least is worth looking into. It is hard for several people to agree on the same lie, especially if they are kept apart.

Civilians should not be allowed to go ahead of the patrol.

In a foreign country the leader or at least one member of his patrol should be able to speak the language.

What to observe. Usually a patrol will have a simple, definite mission, to find out some one thing. If so the leader should not waste time investigating everything he sees. Until he reaches his destination he should make only such reconnaissance as necessary for his own safety. Nevertheless a patrol may often *pick up* on its way valuable information in addition to what it has been ordered to find out. Scouts and patrol leaders should know the things that are of military importance. They should cultivate the *habit* of seeing such things, they should understand what they see, and remember it, or put it down in a notebook, to be reported when the patrol returns.

Sometimes a patrol may be ordered to report what kind of country it has passed through. To do this the leader must be familiar with terrain features and their usual names, he must have a good memory and he must take notes.

Information concerning the enemy is always important, even if not part of the patrol's particular mission. The interpretation of signs has been referred to under Scouting.

The following are some things of military importance which patrols may have to investigate: bridges, fords, towns, buildings, railroads, roads, water supply, camp sites, works of field fortification, etc. Such things are usually best investigated by patrols of special troops (engineers, etc.) or by officers' patrols. But any soldier will make himself more valuable if he learns about these important things. If a

non-commissioned officer of infantry is sent out to examine such features the officer sending him out should tell him exactly what information is wanted, for example:

Bridges. Span. Width of roadway. Height above water. Nature of foundation and type of super-structure (truss, suspension, etc.). Grade of approaches. Probable safe loads. Condition of all parts. Repairs needed. Defensibility.

NIGHT PATROLING.

Need for night patrolling. Patrolling by night is more difficult than by day. As it is impossible to see anything distinctly it is very hard to get accurate information. Only exceptionally skilled men are likely to be successful. Reconnoitering patrols are sent out by night, as a rule, only when it is impossible to get results by day. The distance to which they can go and the amount they can see are very much less than by day. Usually they must depend almost entirely on hearing.

It will, however, often be necessary to send out night reconnoitering patrols. Thus when two opposing battle lines have become "stabilized" very close to each other, especially in open country, patrolling in front of the lines by day becomes impossible because of hostile snipers. During the day reconnaissance is carried on by stationary observers under shelter. But at night these observers can see nothing. Yet continuous reconnaissance is necessary. A patrol of trained men can move by night in terrain where in daylight they would certainly be seen by the enemy. Occasionally a patrol may be sent by night over an exposed route to a position from which they can observe during the following day.

Night reconnoitering is most usual in "stabilized" warfare when the lines are close together, but may be used in other situations. In an outpost almost continuous patrolling is carried on by night. This is discussed in the course in Tactics.

Reconnoitering patrols at night will most frequently be used to:

1. Investigate the condition of wire entanglements and find out where repairs are needed. This cannot be done by day close to the enemy.
2. Investigate the enemy's entanglements.
3. Lie outside the enemy's wire, and by listening locate his outguards, etc.
4. Investigate routes of approach.
5. Reconnoiter definite localities in No Man's Land or within the enemy's lines.

Combat patrols at night are used to:

1. Capture or drive off enemy patrols.
2. Execute silent raids into the enemy's lines for the purpose of capturing prisoners, destroying works or material, capturing maps and documents and otherwise gathering information.

Whatever the mission of a night patrol there are certain rules and methods of conduct which it follows. Its mission should usually be one single definite task, because any extended reconnaissance is impossible by night.

Routes for night movements have been discussed under Scouting. A night route must be easy to follow. Usually such routes will be short. In patrolling in a trench area the patrol leader should know his route from studying maps and photographs, and if possible he should see the terrain in which he is to move from an observation post by day.

Equipment. As movement by night is difficult the patrol should carry nothing except what is absolutely necessary. Even canteens are discarded. Pistols and clubs will be more convenient weapons for fighting at close range than rifles and bayonets. Squeaky shoes and clothing which rustles should not be worn. The leader should carry the same equipment as by day except that glasses will not be needed.

Organization and Formation.

The organization and formation of a night patrol are the same as for a day patrol, except that the distances between men are much less. These distances should be such that all the men can hear the low sound signals of the leader.

Control. Signals.

The arm signals cannot be seen at night, and spoken commands cannot be used when close to the enemy. So control at night is very difficult.

The first thing necessary is a very simple formation (usually the characteristic diamond or lozenge formation of a patrol). Each man stays in his correct relative position at all times so that the leader may know where he is. The next thing necessary is a number of simple plans made in advance, by which each man knows exactly what to do in case of emergency, especially in a combat with the enemy. Night raids on the enemy trenches are usually planned and thoroughly rehearsed down to the smallest detail.

Signals must of course be low sounds. These may be a cluck, hiss or whistle, or a sound made by drawing a pencil across the teeth, tapping a pistol butt with the nails, rubbing a sleeve, blowing across the top of a cartridge shell, etc. The signals should be few in number: "Halt," "Forward," "By the right (left) flank," "To the rear," the "Check-up" and "Identification" signals, with the signals for attack in any direction, will be enough. The "Check-up" signal is one repeated by each member in turn so that the leader may know of their presence and positions. The identification signal is used during combat so that the members may know each other. When any element of the patrol encounters the enemy it gives a distinctive danger signal, upon which the pre-arranged plan for the emergency is carried out. Signals should be rehearsed before starting out.

The actions of the leader before starting out are the same as for a day patrol. Sentries in the front line should be warned so that they will not fire on the patrol by mistake.

In moving the patrol guides on the leader. He may be able to use a distant landmark as a guide. If not he depends on his compass with luminous dial. The patrol proceeds by short bounds, stopping frequently to listen.

Combat by Night.

Encounter with the enemy by night will usually be sudden, unexpected and at close quarters. There will be no time for the leader to make plans.

It is necessary to have a few very simple plans of action prepared in advance, and which are carried out almost automatically as the situation arises. (See Plate 248.)

In its diamond formation the patrol presents four points, one to the front, one to each flank and one to the rear. One of these will be the first to encounter the enemy, and should at once give the danger signal indicating the point of attack. Thus if the point encounters the enemy it calls or signals: "Front." The leader and the men with him near the center of the patrol rush at once to the point of attack, to assist the men who have jumped or been jumped by the enemy. The two flanking groups join the combat by attacking the enemy's flanks. The rear element or the men farthest from the point of attack, remain out of the combat, prepared to cover the rear or to escape and report the occurrence. A similar plan is carried out in case another element of the patrol first encounters the enemy.

In case the patrol is defeated or scattered, each man makes his way back to the friendly lines. It will usually be impracticable by night to reassemble at any rendezvous in advance of the friendly lines. Each man returning reports at the command post of the organization which sent out the patrol.

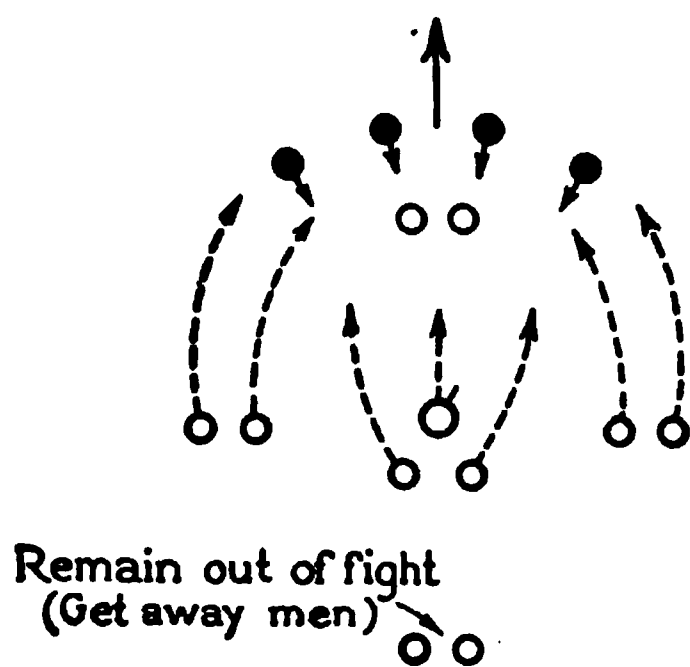


Fig. 1 "FRONT"

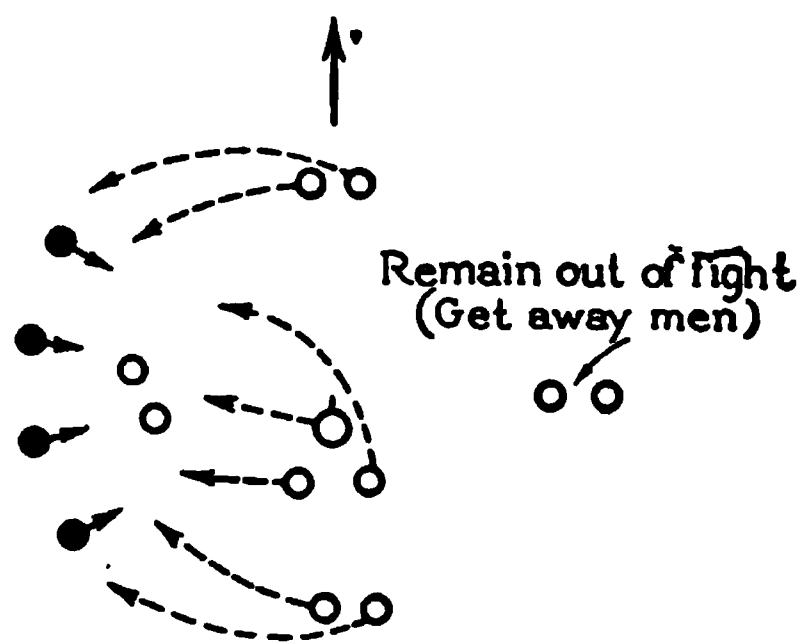


Fig. 2 "LEFT"

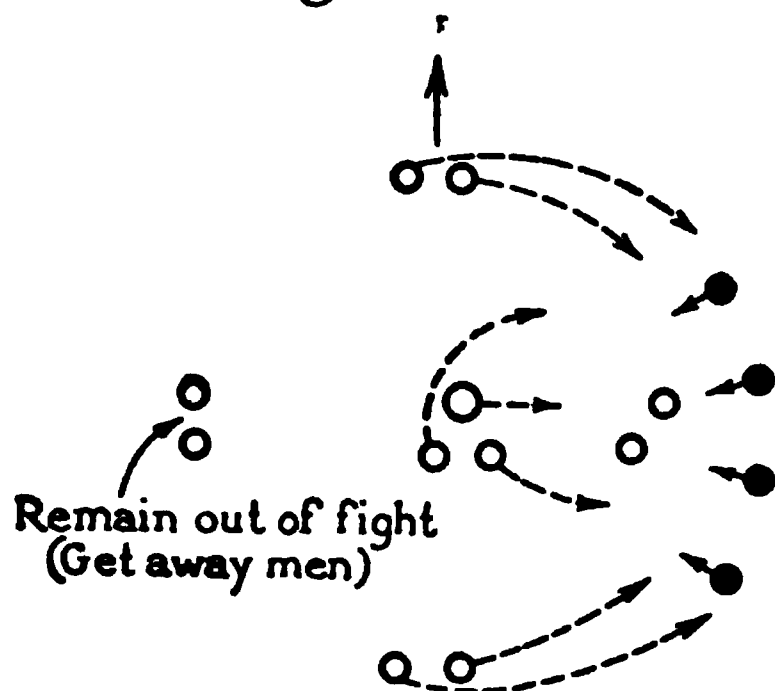


Fig. 3 "RIGHT"

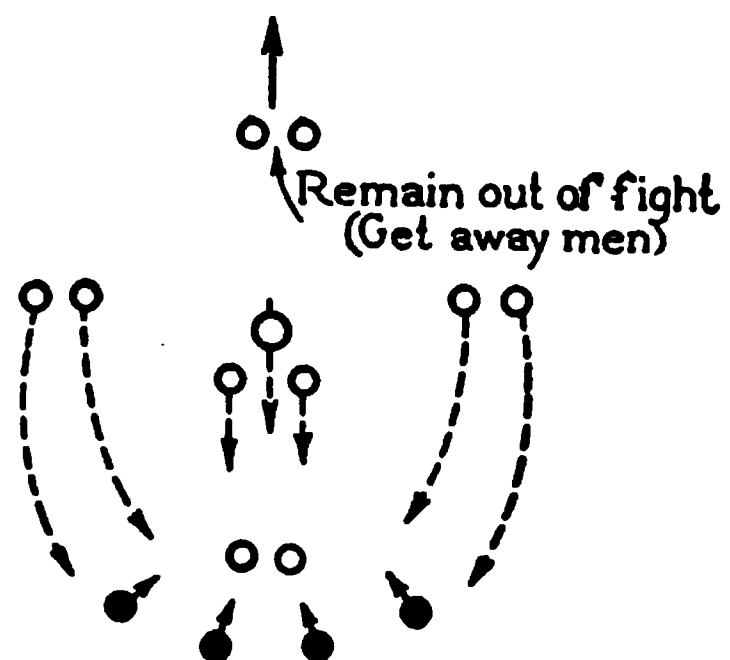


Fig. 4 "REAR"

Members of patrol.....○
 Leader of patrol.....○
 Enemy.....●

PLATE 248.—Night Patrol Combat Plans.

PRACTICAL EXERCISES.

A study of the principles and methods of Scouting and Patrolling as given in this text is not sufficient to make a soldier a capable scout or a competent patrol leader. He must see these principles and methods illustrated and demonstrated in a practical manner, and he must be given practice, and lots of it, in applying the principles himself. And finally, before being pronounced qualified, he should have a practical examination and test as a proof that he has a *working* knowledge of the principles and methods of Scouting and Patrolling.

There follows a number of simple exercises, illustrating the practical application of the principles that have been discussed in the text. These should be taken in connection with the study of the theory. Additional exercise of a similar kind may be devised by the instructor or by the student.

It cannot be too often repeated that one who hopes to be a leader must not only know the game himself, but also *how to teach it to others*.

Demonstrations in scouting and patrolling *on the terrain* should of course be given by trained men if possible. They will thus be much more effective and will require less time. If no trained troops are available the demonstration may be made by students who have been practiced or "coached" in the particular demonstration to be staged. But it is possible to carry out the demonstrations with perfectly green men if they are carefully coached.

The equipment of the men for a terrain demonstration should be such as the scouts or patrol would actually carry under the conditions assumed.

In every demonstration both the *right* and the *wrong* ways of doing things should be shown and the contrast between them pointed out.

The class should be assembled where they can easily see all the details of the demonstration, on a slightly elevated piece of ground if possible. When necessary they follow up the men giving the demonstration. The terrain should be selected to fit the demonstration. A slightly diversified terrain will be suitable for most exercises.

Every exercise (demonstration or practice) should open with an explanation of its purpose, that is the principles and methods to be illustrated.

Exercise 1. Demonstration and Practice. Individual Movement. 1. Have a scout take the prone position, firing and not firing. Point out all details of these positions. Form the class in double rank and have each man practice the positions, coacher by his front (rear) rank file, who will point out and correct mistakes.

Movements should be executed slowly at first, and each detail explained. They should then be executed rapidly and continuously. Demonstrate and practice as above.

2. Scout springing up from prone position and running forward.

3. Scout dropping to prone position in all combinations: (a) From a walk or halt; (b) from a run; (c) with rifle; (d) without rifle; (e) to firing position; (f) to position not firing.

4. Scout executing: (a) Creep; (b) crawl; (c) rapid crawl; all with and without rifle.

In the demonstrations the creep and crawl should be executed at various distances from the class, and both correctly and incorrectly, the instructor pointing how careless movement makes the scout much easier to pick up.

Exercise 2. Practice. Individual movement. Divide the class into three equal groups. Place two in observing positions about 350 yards apart. Place the third group at a point about 250 yards from each observing group. Each man in the third group is to assume that he is a scout who must pass between the two observing groups, who are enemy observers. Each will: (1) Select the route he is to follow; (2) determine his intermediate stopping places; and (3) decide upon the method of movement in each bound. Have the men in succession move over the routes they have selected in the manner each has decided upon.

The observing groups will judge the relative efficiency of the men of the third group, based on how well they keep concealed and their rate of progress. The mistakes of the men moving should be pointed out as they are made.

Interchange groups and repeat. The exercise should be carried out on a well-diversified terrain, rolling, with ditches, hedges, bushes, clumps of trees, etc.

Exercise 3. Demonstration and practice. Individual movement by night. 1. Demonstrate walking through weeds and on rocky ground by night, the right way and the wrong way. Call attention to *difference* in noise made. Have class practice the movements.

2. Have a few students at a time creep and crawl blindfolded in front of the class. Place obstacles in their path (stones, tin cans, wire, empty boxes, and other rubbish). Continue until all have practiced.

3. Demonstrate the passage of a wire entanglement, by stepping over and by crawling under. Have a few students at a time practice the movements, first with their eyes open, and afterwards blindfolded.

4. Take the class out by night. Post some as outguards at intervals of about 100 yds. Have others try to pass through the line of outguards. Rule out any who are discovered.

Exercise 4. Demonstration. Concealment by day.

1. Have a scout *move* on a *skyline*. Point out how easily and quickly he is seen.

2. Have a scout look *over* a rock, bush, log, etc. Point out how much he is exposed. Now have the same man look *around* the rock or log, etc., and *through* the bush. Point out how much less exposed he is.

3. Have the scout on the skyline, look over it toward the class, choosing a bare unbroken part of the crest. Next have the same scout observe from a part of the crest broken by a depression, bush, weeds, etc. Point out how much more exposed the scout was in the first case.

4. Have a scout at a suitable distance move in front of a red barn or other building which contrasts with the uniform. Next have a scout move close in front of some bushes. Next have a scout move in front of an irregular clay or sand bank.

Point out how in the first case the scout is plainly visible against the contrasting background; how in the second case the background blends with the uniform, making it harder to pick up the scout; and how in the last case the background of the same color as the uniform makes it very hard to pick up the scout.

5. Have a scout observe from a position in the shadow of a tree or building. Have another observe from the sunny side of the tree. Point out how much easier it is to pick up the man in the sunlight. Have the scouts crawl forward, one in the shade, the other in the sunlight. Point out how the movement betrays the scout who is not taking advantage of the shade.

6. Have scouts fire (or simulate firing); (a) *over* a stump, (b) around the *left* side of a tree, (c) from the *left* side of a door or window, (d) from the *top* of a bank, and (e) *over* a parapet. Next have the same scouts fire around the *right* of the stump, and of the tree, from the *right* side of the door, from *behind* the bank, and through a scooped out loop-hole in the parapet. Point out how much less the scouts are exposed in the second case.

7. Have a scout look out of a window and a door standing close to the window and in the doorway. Next have the scout move back from the window and door still looking through. Have him go to the cellar and look out of a cellar window. Point out how much less likely the scout is to be noticed in the last case.

8. Have a man behind a thin bush expose his face and hands, and move his heels and other parts of his body. Have another man lie behind the same or a similar bush covering his face and hands, and remaining absolutely motionless. Point out how the white face and hands of the first man indicate his presence, and how even a very slight movement of the body is noticeable. Have three men, one in white, one in blue and one in service uniform lie partly concealed by thin bushes. Point out how the conspicuous uniform shows the position of the scout.

9. Have two scouts lie, partly concealed, in the sunlight. Have one carry a tin cup and the other some glistening objects and have them move these slightly. Show how these objects indicate the scouts position by reflecting the sunlight.

10. Have a scout in a green gunny sack suit lie still in some green grass quite close to the class. Have another in a mud covered gunny sack suit lie in some muddy or sandy ground. Point out how these crude, easily constructed suits make an observer very difficult to detect.

Other expedients to illustrate the points covered in "Concealment by Day" may be readily devised. Encourage discussion and comment.

This demonstration may be followed by practice exercises in the use of cover and observation. The following is an example of such exercises:

Divide the class into two groups. Move group one into a house. Let group two scatter, and take up partially concealed positions, indicated by the instructor, within 300 yds. of the house. Give group one ten minutes to locate the various men in group two. Change groups and repeat. Grade each group—each man found counting one point for the observers.

Divide the class into several groups. Have all but one face in one direction. Have remaining group deploy with 10 yards interval and move 150 yards in opposite direction. Halt them and allow them one half minute to get under cover. Give observers two minutes to locate scouts. Grade each group as before. Repeat exercise, using other groups. Compare results.

Exercise 5. Demonstration and practice. Selection of observation points and routes. These exercises should be given first on the map and sand table, and afterwards on the terrain.

1. Assume a simple tactical situation for a scout or patrol, requiring the selection of an observation post and route. Select the post and route, and show the bounds into which the route is divided. Explain reasons for the selections. Give other simple situations and cause the students to select observation points and routes, giving their reasons.

2. On a diversified terrain have one half the class select an observation post and occupy it. Have the other half approach from a distance of 400 or 500 yds. Rule out any who are seen. The score will be the sum of the distances at which the men are seen. Interchange the groups and repeat. Compare results and criticise the procedure.

This exercise may be conducted as follows: Arm half of the observers with rifles and blank cartridges, there being one observer to each rifleman, and have them fire on any man they think they see. When a shot is fired the instructor halts the men moving (by whistle) and asks the firer to point out the locality at which he fired. If there is a man there he is ruled out, and the advance is then resumed (on whistle signal) until another shot is fired.

Exercise 6. Practice, Observation by day. Take the class to an observation point overlooking a fairly diversified terrain. Allow them to observe for 5 minutes. Then move them out of sight, and cause each man to write a list of the important features he has seen.

Exercise 7. Practice. Observation by day. Danger localities. From an observation point overlooking a diversified terrain, the instructor requires the students to point out danger places which might be occupied by the enemy, giving in each case the reasons why they might be occupied (favorable for concealment, observation, cover from fire, for cross or flanking fire, etc.) The students may also be required to indicate the routes by which they would approach such localities.

The instructor then blows a whistle, when flagmen whom he has posted in the danger places, rise and mark the places. He then discusses with the class the localities thus indicated.

The exercise should be repeated on other terrain.

Exercise 8. Practice. Observation, searching ground. Take the class to an observation point overlooking a diversified terrain in which various objects (individual men, groups, silhouette targets, flags, fox-holes, etc.) are partially concealed at various ranges. Have the members of the class, equipped with compasses and field glasses, search the terrain and record (each for himself) the range, azimuth and description of each object located. Score each man according to number of objects discovered, correctness of record, and time consumed.

Exercise 9. Demonstration and practice. Observation by night. At night conduct the class to a diversified terrain. Provide light (lanterns or flashlights) to allow reading of compasses. Various noises are now made, one at a time, in various directions and at various distances. The instructor tells what caused the noise, and its range and direction. Other noises are now made and each student is required to record the range, direction, and cause of each.

The following are suggested:

Digging.
Cutting wire.
Whispering.
Coughing.
Sentry challenge.
Crawling.
Walking.

Laughing.
Striking a match.
Rattle of equipment.
Bark of a dog.
Loading a rifle.
Driving pickets.
Helmet striking a wire.

Exercise 10. Practice. Writing Messages. The instructor gives a simple situation and indicates an observation post, on the sand table or on actual terrain. He

then describes some imaginary object or occurrence, or points out an actual object (if on the terrain). Each student, assuming that he is a scout occupying the post, is then required to write a message on the approved form, accompanied by a location sketch, to an imaginary commander at some designated distant locality. The instructor collects the messages, reads them aloud, criticizes mistakes and omissions, and encourages discussion.

Exercise II. Sand table demonstration. A day reconnoitering patrol.

The sand table is prepared as in Plate 249. The instructor may at this point explain the preparation and uses of the sand table if this has not previously been done.

The instructor explains the purpose of the demonstration. He reads and explains the general and special situations, pointing out localities referred to. He then conducts the demonstration orally, marking the positions of members of the patrol, enemy, etc., with matches or colored pins. He emphasizes the principles and methods illustrated, and finally summarizes the exercise and encourages questions and discussion.

General situation. Blues and Reds are at war. Blue forces yesterday drove Red detachments from the wooded ridge on south edge of map (Plate 249). The resistance of the Reds was chiefly long-range rifle and machine gun fire. This is the first resistance encountered. The territory shown on the table is Red.

Special situation. The 1st Battalion 1st Blue Inf, in the first line, has halted upon reaching the wooded ridge. The advance is to be continued to-morrow. The battalion commander has ordered that patrols be sent to reconnoiter to the front.

Lt X, commanding one of the assault platoons of Co A, sends for Corp A, leader of the 5th squad, and issues to him the following orders (at 1:30 PM):

"Intelligence reports indicate that the enemy has retired to a position on the high ground about 2 miles north of here. We remain here to-night and continue our advance in the morning. The companies on our right and left will reconnoiter their own fronts.

"Take the scouts of the 5th and 6th squads, move north to the village of Ellis, about a mile from here, and find out if it is occupied by the enemy. Reconnoiter the ground between here and the village, over which our company must pass in its advance, especially Shell Creek, the woods beyond, and the village itself. Send messages to me here. Be back by dark. It is now 1:38 PM, set your watch. Any questions?" (Shell Creek is the large stream in center of map.)

While giving this order Lt X points out to Corp A the localities referred to, using this map. (Plate 249.) He shows the corporal the limits of the company's zone of action. Corp A makes a rough tracing from the map of the ground he has been ordered to reconnoiter.

Demonstration 1. Corporal A's estimate of the situation at this time, and his plan of action.

Mission. Corp A's mission is to reconnoiter the company zone of action as far to the front as the village of Ellis, inclusive.

Enemy. The hostile detachments thus far encountered were probably a hostile outpost, which has retired before the Blue advance. Corp A may expect to encounter hostile patrols or observing groups even before he reaches the village.

His own troops. The Blue hold their present front in force, and will advance to-morrow. The companies on both flanks will send out patrols to reconnoiter their fronts. Corp A may encounter these patrols. Corp A's own patrol is five men. He will be able to send back probably not more than two messages.

Terrain. Corp A studies the terrain from the lieutenant's map. He notes that Shell Creek crosses the company zone of action at the near edge of the woods, and that it might be a serious obstacle if the enemy held the edge of the woods. Even if he does not the creek may be unfordable. He notes the branch creek beyond. This will also be an obstacle to the advance, but probably less serious. Certainly it will be necessary to reconnoiter both of these streams and the woods. Corp A sees that there is a road leading to Ellis from the creek junction, but considers it too

exposed a route for his advance. The creek bottoms will be better, especially as he must in any case reconnoiter them. On reaching the far edge of the woods Corp A believes he will be able to see the houses of Ellis. But a closer view will be necessary before entering the town. Corp A notes that the high point in the small wood southwest of the village will apparently afford the best view. But he will have to cross open terrain to reach it, and would likely be seen from the village. He can gain the woods to the southeast without exposing himself to view, but they will not afford as good a view, nor as close an approach. From the village, or near it, Corp A will be able to judge how well fire from the village would sweep the open ground to the south in the company's zone of action.

Plan of action. Corp A's plan of action is limited for the present to selecting a route as far as the north edge of the woods. He decides to move down the draw to his right front, thence along the bed of Shell Creek to the junction, thence along the branch creek to the locality where it enters the woods. Arriving here he will select his next point of observation. He plans to return by a different route.

Demonstration 2. Actions and orders of Corp A prior to starting out.

Corp A assembles his patrol and inspects the men and their equipment. He sees that the men are fit, that all collar ornaments, letters, etc., are left behind; that all superfluous equipment, or any that rattles or glistens in the sunlight is replaced; that each man has a rifle, a belt full of ammunition, a bayonet, and a filled canteen. Corp A checks his own equipment, which includes, besides his arms and accoutrements, a sketch (made from the map), message book, watch, pencils, compass and field glasses. He orders as follows: "The enemy is believed to have retired to a position two miles north of here. Our battalion remains here to-night and advances to-morrow. We are a patrol to reconnoiter the company zone of action as far as the town of Ellis about a mile north of here, and to find out if the enemy is in the town. We will reconnoiter the ground between here and the village, especially Shell Creek and its branch, the woods and the open ground beyond. We will enter and examine the village.

"We will move down this draw, thence down the main creek to the road, thence up the branch to the edge of the woods. There we will decide the best way to approach the village.

"We must be in by dark. Messages will be sent to Lt X here.

"Black, second in command and get-away man; Jones point; Gregg observe to right; Gray to left. I will follow Jones at 25 yards. All keep within sight and speaking distance. We will use the regular signals (forward, halt, lie down, assemble, change direction, enemy in sight).

"In case we are scattered we will reassemble at the stream junction. Any questions? Move out."

While giving this order Corp A points out on his sketch, and on the ground, the localities to which he refers.

Demonstration 3. Moving down a ravine or draw.

Jones (point) moves down the left side of the ravine, observing in the direction in which he is moving. Gray (left flanker) moves down on the same side, high enough to see over the crest to the left. Gregg (right flanker) moves on the other side of the ravine, observing to his right. Corp A moves down the right side of the ravine keeping the three men in front in sight. Black moves in the bottom, keeping Corp A in view. The men are separated by distances of 15 to 20 yards. (See Fig. 1, Plate 249.) They do not move simultaneously, but one or two at a time; that is, while Jones moves Gray and Corp A are in concealed positions (prone if necessary), watching him, and observing the terrain.

Demonstration 4. Crossing a stream.

As Jones approaches the creek bottom he signals; "Halt." The patrol halts, and Corp A goes forward until he can see what Jones can see. Both study the terrain up and down stream on the far side.

While Corp A observes across the stream, Gray downstream and Gregg upstream, Jones crosses and moves to a position from which he can observe the terrain

beyond. Corp A crosses next, followed in order by Gray and Gregg. Black remains on the near side until the patrol has reached the woods. (See Fig. 2, Plate 249.)

Demonstration 5. Moving through woods.

Corp A's mission is to reconnoiter the town of Ellis, and also the intervening terrain. Accordingly, on entering the woods he takes up a formation suitable for both reconnaissance and security. The limit of visibility in the woods is about 40 yards.

Jones (point) moves parallel to the stream, and about 50 yards from it (in the woods). Gray (left flanker) moves parallel to the stream, about 20 yards from it (in the woods), and about the same distance in rear of Jones. He observes the stream bed and far bank. Gregg (right flanker) moves about 30 yards to the right rear of the point, observing into the woods to his right. Corp A follows Jones, keeping the three leading scouts in sight. Black follows, in sight of Corp A (Fig. 3.) All guide on Jones (point). Corp A watches the scouts and controls their movements. The men move from cover to cover, selecting a new halting place before leaving a former one. They move stealthily and noiselessly.

Demonstration 6. Inspecting a bridge.

As the point reaches the stream junction Corp A halts his patrol. He moves where he can see the bridge over Shell Creek, and carefully observes the locality. Corp A's orders did not specify that he should inspect this bridge. It is of no great importance to his company. But Corp A realizes that the road through Ellis will be an important route of transport in the advance of the Blue forces. Battalion and higher commanders will be interested in the condition of the bridge, and being so close Corp A decides to take a look at it. He would not have done this had it involved any great amount of time.

He posts Jones in the edge of the woods to observe to the northwest and cover him while he moves along the stream bed to the bridge. (Fig. 3.) Corp A notes that the roadway of the bridge is 16 feet wide and about 10 feet above the bed of the creek. He sees that the bridge is a good steel truss, apparently quite strong and heavy, and all parts in excellent condition. He makes note of this information for his report. The matter is not sufficiently urgent to send back a messenger.

Demonstration 7. Meeting a hostile patrol.

Having completed his inspection of the bridge without exposing himself above the creek bottom, Corp A signals to Jones: "Move to the right." Jones returns to his position at the head of his patrol. Corp A signals: "Forward," pointing up the branch into the woods. The patrol continues in the same formation.

As Gray reaches the bend in the branch about 100 yards above the junction he signals: "Halt," and "Enemy in sight". Corp A observes that Jones and Gregg have seen the signal, halted and taken cover. He signals Black (get-away man) to halt, and moves cautiously to his left front to join Gray. Through an opening in the trees he sees a Red cavalry trooper mounted and holding three horses, in the edge of the woods, off the road, 150 yards northeast of the bridge. (Fig. 1.)

Corp A orders Gray: "We will move off to the right and then up this branch. Same formation. Our assembly point if dispersed, will be on the creek where this branch enters. Tell Jones, and wait for my signal to proceed."

Corp A moves cautiously over to Gregg, informs him of the situation, and gives him the same order. He and Gregg then move to the right rear, Corp A signaling to Black, "Assemble." When Black joins the corporal he is also informed of the situation and given the order.

Corp A signals Jones and Gray: "Forward," as he moves off to his right front. Having moved about 100 yards farther into the woods, the patrol halts, re-forms, and continues up the branch in the same formation as before. (Fig. 1.)

Demonstration 8. Selection of an observation post and route thereto.

As Jones reaches the north edge of the woods he signals; "Halt." Corp A joins Jones, and together they observe the open country and the village. (Fig. 4.)

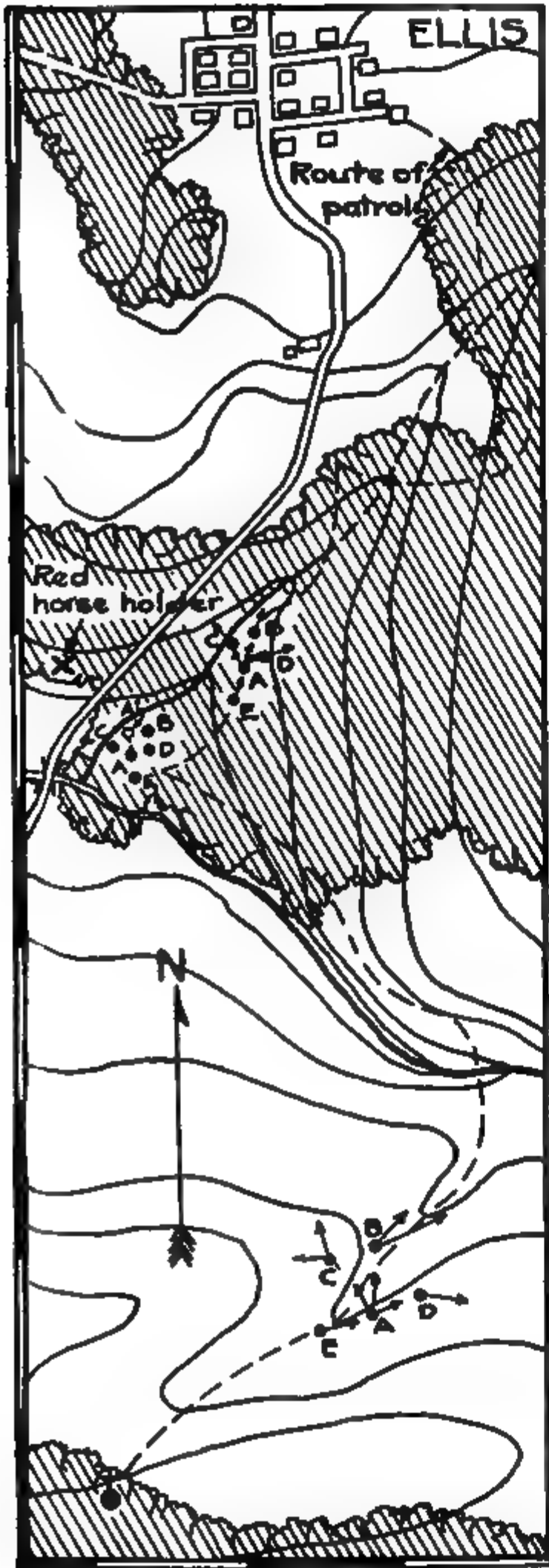


Fig. 1

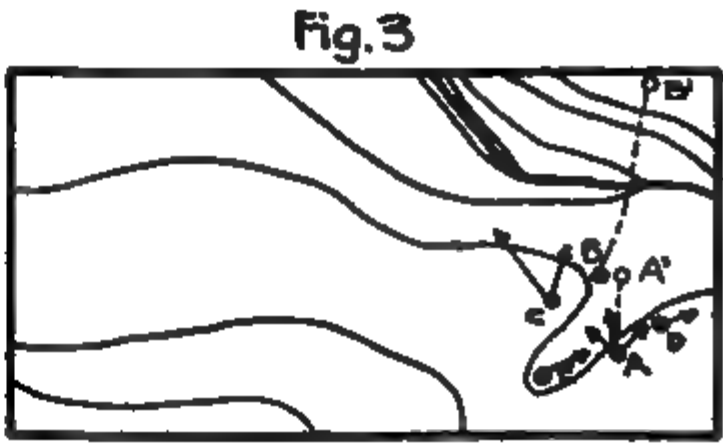


Fig. 3



Fig. 2

- | | | |
|---|---------------|---------|
| A | Leader | Corp. A |
| B | Point | Jones |
| C | Left flanker | Gray |
| D | Right flanker | Gregg |
| E | Get-away man | Black |

From their position they can see the tops of the houses only. Corp A notes that to gain the woods southwest of the village he must cross some 300 yards of open terrain and pass a house. He will also run some risk of encountering the Red cavalry patrol whose horseholder he has seen, and he may be observed from the village. On the other hand he can move in the woods to a concealed position southeast of the village and within 150 yards of it, where good observation will be possible. Here he will have a good line of retreat, through the woods.

He decides to move in the woods to the point southeast of the village. This will take him out of the company zone of action. He is not required to reconnoiter this portion of the woods, and hence decides to move in a column formation, favoring concealment and rapid progress. He signals to his patrol; "Assemble," and issues the following orders: "We will move along the edge of the woods to the point nearest the village on the southeast, and observe from there. Jones, keep about 25 yards inside the woods. Gray and Gregg, follow me at about 15 yards and observe to the flanks as before. Black, follow Gregg at 20 yards. Move out, Jones." (Fig. 4.)

In this formation the patrol moves to the observation point selected.

Demonstration 9. Approach to and observation from a house.

As Jones reaches the designated point, in the edge of the woods 150 yards southeast of the village, he signals; "Halt." Corp A joins him, and together they observe the village, and especially the nearest house, for about five minutes. Corp A then signals to the patrol; "Assemble," and orders: "We will move to that house (pointing) thence through the village to the woods southwest. Gray, watch the road and the edge of the woods to the South. Gregg, watch the ground to the north. I will watch the house. Jones, go on to the house." (Fig. 4.)

Jones moves towards the house, advancing from one bush to another, and creeping behind folds of the ground. When he reaches the house he looks through the windows, while Corp A watches. Jones finally enters the house. Five minutes later he reappears at the door on the side towards Corp A and signals; "Forward." Corp A at once joins Jones, moving in the same cautious manner, and is followed at intervals by Gray and Gregg. Black remains in the edge of the woods, observing the house, and occasionally looking to his flanks and rear.

Corp A searches the house. It has evidently been hurriedly vacated. He finds a collar insignia of Co D 12th Red Inf. In the fireplace he finds a partially burned scrap of paper bearing the words:

* * * order of Maj Gen SCHMIDT

H. S. Myer,

Chief of * * *

The house is the largest in the village. From the upper windows Corp A inspects the village. He can see all the houses. There are no signs, either of the enemy or the inhabitants. Suddenly Gray who is observing to the south, calls out; "Enemy in sight." Corp A goes to Gray's window and perceives four Red cavalymen moving north along the road towards the village. They pass through the town without stopping.

Corp A assembles his patrol (except Black, who is still in the woods), shows them the insignia and scrap of paper, and orders: "You saw that patrol pass through. It looks as if there were no enemy in the village. I can see no signs. Gray, take this insignia and paper with a message to Lt X. Join Black, give him the insignia and paper and a copy of the message, and both of you return to our lines as rapidly as possible. Take a new route. Any questions?" Corp A then writes the following message:

Southeast corner of ELLIS,

4:00 PM, June 12, 22

To Lt X. (*By messenger.*)

SHELL CREEK fordable all points. Woods unoccupied. Some underbush, limit of visibility about 40 yards. Saw Red horseholder, four horses near bridge south of here 2:20. Four Red cavalry passed through village to north at 3:55. Insignia, Co D 12th Red Inf found in house. No other signs of enemy. Will search village.

A, Corporal.

Corp A hands two copies of this message to Gray and dispatches him. Gray and Black return to Lt X through the woods. They do not move together, but as a two-man patrol, Gray giving one copy of the message, the insignia and scrap of paper to Black.

Demonstration 10. Reconnaissance of a village.

Corp A orders Jones and Gregg, "We will search the village. Move down that street (pointing) Jones on the left, Gregg on the right. When you reach a house one man search it rapidly while other covers it. I will follow Jones. Move out."

In this manner the patrol moves through the village, searching all the houses. Signs of enemy occupation and hasty departure are noted in several houses. Some pieces of equipment marked "Co D 12th Inf" are found. Corp A notes that all pumps have been demolished, and open wells filled with rubbish.

At 5:30 PM the patrol reassembles at the first house entered. Corp A orders, "We will return, moving straight south through the woods. Jones in the lead, observe to front, Gregg 20 yards behind, observe to right and rear. I will observe to left and front. Move out."

Demonstration 11. Capture of hostile messenger.

Just after the patrol has entered the woods Jones signals; "Halt. Enemy in sight," and takes cover. Corp A sees a Red infantryman moving carefully through the woods, 60 yards to his right front. He watches him for a moment, and decides that he is alone. He signals Gregg to move to the right, and aims at the Red. The Red halts, and looks in Gregg's direction. The patrol is now on three sides of him at some 40 yards distance. Corp A calls out, "Surrender. Get him, Jones." Corp A searches the prisoner and finds a written message:

"Enemy outposts located as per sketch. Z, Sgt."

On back was a sketch of a part of the Blue position.

Corp A questions him, but the prisoner refuses to answer. He orders; "We will proceed. Jones in lead, Gregg follow at 20 yards, watch flanks and rear. I will take charge of the prisoner. Move out." Corp A fixes his bayonet, and compels his prisoner to walk about five paces in front of him.

In this manner the patrol proceeds to the edge of the woods. Here it halts and observes the open ground, and then proceeds up Shell Creek and the small draw in which it started out, to the Blue lines.

Exercise 12. Demonstration and practice. Night patrolling.

1. The instructor demonstrates the usual sound signals for control by night. He varies the distance at which they are given to show the range of the various signals. He then demonstrates a simple code, and causes the students to turn their backs and identify and translate the signals. The students then practice giving and identifying the signals.

2. The instructor next demonstrates the formation and usual distances in a small night patrol, and how the patrol executes the simple movements (including combat formations) by sound signals of the leader. The students are then practiced in moving as small night patrols guided by sound signals, on the terrain, first by day and afterward by night or blindfolded.

CHAPTER IX.

MILITARY HYGIENE, SANITATION AND FIRST AID.

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PERSONAL HYGIENE.

Importance of Hygienic Measures.

Hygiene is the art of maintaining the health. *Personal Hygiene* refers to the measures which every individual, soldier or civilian, should take to maintain his own health, which measures also help to prevent the spread of disease.

Good health is the greatest of blessings. And in maintaining our own health we also help others to keep their health, because most diseases, as we shall see later, are rather easily transmitted from sick persons to those who are well.

The rules of personal hygiene which follow are the result of many years of experience. If you obey them you will profit greatly, you will enjoy life more, accomplish more, make more friends, and live longer.

Battles are won by healthy, vigorous soldiers and by them alone. Morale, stamina, courage, cannot exist apart from physical health and vigor. In most of the wars of the past more men have died from disease than from wounds received in battle.

When a man is enlisted as a soldier he is very carefully examined to make sure that he has a strong constitution and is in perfect health, because only such men are fit to be soldiers. Thereafter it is the duty of the soldier to keep himself always physically fit for any duty. The rough outdoor service of the soldier is a joy to the man who bubbles over with good health and spirits, but it soon breaks down even a strong man who does not take proper care of himself. He then becomes a burden to his organization and his country.

And so you should keep yourself in perfect health by following the wise rules which will be given you :

1st. Because it is your patriotic duty to your country, either as a soldier or private citizen, to keep yourself always fit to perform your duties.

2nd. Because in maintaining your own health you help to maintain the health of your comrades.

3rd. Because, from your own selfish point of view, life is worth living only when you are in good health.

Many of the rules which follow are based upon our knowledge of the causes and proper means of prevention of communicable diseases. These are discussed later. The reasons for some of these rules will be better understood after reading "The causes and prevention of disease."

THE RULES OF PERSONAL HYGIENE.

Personal hygiene consists in the application of a few common sense rules of conduct, the observance of good habits, and the avoidance of excesses of all kinds. A very few simple precautions will enable the soldier or civilian to avoid most of "the ills to which the flesh is heir." By observing these rules not only will you be

far less apt to get sick, but you also will be far more apt to recover from any sickness which may overtake you. The rules are as follows:

If sick go to the doctor. If at any time you do not feel perfectly well, or if your bowels are not working properly, report to the surgeon for treatment. If you do not feel well something is certainly wrong, and early treatment may prevent serious illness. Do not hesitate out of false pride because your illness is slight. It is your duty to take this precaution. Very slight indispositions such as a cold, headache, nausea, sore throat, diarrhoea, fever, eruption (rash) on the skin, may be the symptoms of a contagious disease to which you expose your comrades if you do not inform the doctor. Never attempt to treat yourself.

Keep away from sick people. The communicable diseases are transmitted from sick people to those who are well. Therefore keep away from the sick unless it is your duty to care for them. In that case observe the instructions given by the doctor. If you are sick yourself you may have a communicable disease. So spare others by keeping away from them. Report promptly to the doctor.

Good habits. In a broad sense all these rules are good habits. If you do a thing repeatedly you form a "habit," and it is then much easier to do it. The most desirable good habits include personal cleanliness (of the skin, scalp, mouth and teeth), the avoidances of excesses (especially in eating, drinking and sexual indulgence), fresh air and deep breathing (very important), the avoidance of cold and wet (especially wet feet), proper clothing and shoes, moderate exercise, regularity in all things, ample rest under favorable conditions, recreation and amusement in the society of comrades, keeping the normal physiological functions in good working order, clean and sanitary surroundings, so far as within your power, clean thoughts, etc.

Disposal of body waste. The regular physiological life of the body consists of constant waste and constant repair or replacement. The waste tissues, unless promptly and thoroughly disposed of or excreted, become poisons which debilitate the body and undermine the health. Nature has provided a number of avenues by which waste products are expelled from the system. The chief of these are the lungs, the pores of the skin, the bowels and the kidneys, and all of these should be kept in efficient operation. For the lungs, deep breathing of pure, fresh air, and occasional complete expulsion of residual gases, that is breathing *out* as well as in, is required. The skin can be relied on to function properly if it is clean. The bowels should operate at least once a day. The kidneys are kept in good order by drinking plenty of water, so that the urine is habitually of a pale color. All these processes are facilitated by rest and exercise, and by moderation in eating and drinking, which prevents their being overloaded.

Personal cleanliness. Personal cleanliness is the most desirable of good habits and the mark of the superior man. Filth is associated with many diseases, and the soldier who is attentive to the cleanliness of his person takes the best insurance against sickness. Every man should take a bath at least once a week, and oftener if possible, especially in warm weather. Personal cleanliness should include the skin, the mouth and teeth, the nose and ears, the scalp, the genitals and rectum, the armpits, the hands and feet. A clean body must be clothed in clean garments, and a change of underwear should follow every bath. A man should not sleep in his underclothes when it is possible to don night clothes. Cleanliness is more a matter of habit than of opportunity. The man who really wishes to be clean will generally contrive to be so under the most discouraging conditions.

Never take a bath immediately after eating, wait an hour or two. Never take a cold bath when overheated from exercise. Wash your hands frequently, especially before meals. Otherwise some disease germs from your hands may get on your food. Keep your nails clean, and trimmed short; clean nails are one of the chief distinguishing signs of good breeding and self-respect. A man whose nails are clean is generally clean in all other respects. See also "Care of the Feet."

Brush your teeth and rinse your mouth at least twice daily, and always before going to bed. A clean tooth never decays. If your teeth show any signs of decay go to the dentist.

Keep your hair short and wash and massage your scalp frequently. Don't wear a beard. Wash your eyes, ears and nose.

If there are germs on your skin because you do not keep it clean, they will get into any wound you may receive.

Cleanliness of surroundings. Next to personal cleanliness, cleanliness in quarters, mess, baths, latrines and all other places frequented by soldiers or civilians is of the greatest importance. Filth promotes disease, and the sanitary precautions which we take to prevent disease may be almost summed up in one word—*cleanliness*. Some one has said: "Cleanliness is next to Godliness." It is even more important to our *physical* well being. The real truth is, cleanliness is part of Godliness. Decency and self-respect cannot exist in filth.

The clean, self-respecting and patriotic soldier, will do his part in preserving and promoting the order and cleanliness of his surroundings thus satisfying his own pride and contributing to the health, comfort and happiness of his comrades. He will not spit, defecate or scatter waste promiscuously. The exigencies of campaign neither require nor justify filth of any kind. On the contrary filth is more dangerous in war, when men are living in close contact, than in peace. It promotes disease of every kind. Cleanliness of person and surroundings are essential to good health, self-respect, and fighting efficiency. The man who lives amongst clean and beautiful surroundings which he has himself helped to create and maintain, naturally and justly considers himself superior to one who willingly lives in filth and squalor. And it is the sense of superiority that wins battles.

Cleanliness and neatness are worth many times what they cost, and are the surest index of the discipline and fighting efficiency of a command. The organization whose men, camp or trenches are clean, and attractive, is always a good organization, and one to be depended upon in any emergency. Any man may be proud to belong to such an organization, provided he is doing his share to maintain its high standards.

Disposal of wastes. Waste materials of all kinds, especially feces, urine and kitchen garbage, should be properly disposed of. Otherwise they breed disease and they always lower morale. The manner in which waste is disposed of is described later. Make up your mind to do your share to keep things clean and orderly. Do not urinate or defecate promiscuously but go to the places provided. And leave them as clean as or cleaner than you find them. Don't throw garbage or any kind of waste on the ground or the floor, and never hide it in a corner or on a shelf. Place waste in the receptacles provided. If none are provided speak to some responsible person. Whenever you see any waste or trash around your own premises do a bit of cleaning up. If everybody will do this there will be no filth.

Fresh air. Fresh air is more necessary to life than either food or drink. We can live for days without drink or weeks without food, but we can live only a few minutes without air. There is no danger of over-indulgence in fresh air.

Impure air lowers the vitality just as poor food will do it. This renders you less able to resist disease if the germs get into your body. Also impure air is very apt to contain the germs of respiratory diseases, fresh air seldom contains them.

It is as important to thoroughly *empty* the lungs as to fill them, as otherwise a poisonous residue remains. Form the habit of occasionally expelling all the air from your lungs and drawing in several deep breaths.

Insist on proper ventilation of your quarters, especially during sleep. Don't sleep in a crowded room if you can avoid it. If on a street car open the window opposite you, if in a tent roll up the walls in good weather.

The respiratory diseases, which result from germs which you inhale, are amongst the most deadly of all diseases. Fresh air, and strong lungs resulting from deep breathing of fresh air are your best safeguards against pneumonia, the most dangerous of all diseases.

Eating. Almost everything is bad if carried to excess and this is especially true of eating. In America at least there is probably as much suffering from over-

eating as from lack of food. It has been said that the average American "digs his grave with his teeth." Certainly the average soldier eats more than is necessary to maintain his health and strength, and he thus overloads his digestive system, and the avenues by which waste products escape. This is not only unnecessary but positively harmful.

Eat moderately. Do not take upon your plate more than you think you can eat. It is better to leave the table still feeling hungry than with a sensation of having eaten too much.

Eat your meals at the proper times, that is regularly, and avoid eating between meals. Eat slowly. Masticate (chew) your food thoroughly. That is what your teeth are for, and if you do not use them your stomach has more work than nature intended it to have. If you bolt your food you will suffer for it when you are older, and your life will be shortened.

Be careful about eating uncooked foods of any kind unless you know where they come from. Food is very apt to contain the germs of disease, and the heat of cooking kills these germs.

Eat at your own mess. Avoid restaurants and lunch rooms except in emergency, and even then unless such places have been approved by the sanitary officers as cleanly and wholesome. It will do you no harm to go hungry occasionally, it gives your stomach a rest.

In the army mess a properly proportioned diet will be served you. By this we mean a diet with the proper amounts of different kinds of food, meats, fats, starchy foods, vegetables, fruits, etc. If you have to select your own diet at a restaurant make it *varied*. Eat some meat and eggs, but not too much. Include some fresh foods such as green vegetables and fruits—there is little danger of too much of these. Do not eat excessive amounts of sugar, salt, pepper, vinegar or mustard. Sugar is an important food, but too much of it is bad. Your foods as served will contain as much salt as you really need.

It will be well worth your while to prove to yourself how much stronger, more vigorous and happy you will feel as a result of moderation in eating. *Don't eat too much*, is the best rule we can give you.

Relation of weight to health. In connection with the subject of eating or over-eating, it is well to remind you that there is a very close relation between *weight* and *health*. There is a *proper* or *normal* weight for every height. These normal weights are given in the following table, used by recruiting officers. If you weigh very much less or especially *very much more* than normal for your height, you are more subject to disease and not apt to live as long as if your weight is correct. You are what the insurance companies call "a bad risk." So watch your weight. There are various methods of regulating weight which you will find advertised in the periodicals. Most of them are effective. But you will find that the following simple rules will usually prevent overweight, the thing most to be feared:

1. Lead a regular, normal life, with fresh air and exercise.
2. Don't eat too much.

STANDARD PROPORTIONS OF HEIGHT (Inches) AND WEIGHT (Lbs.).

Height	Wt.	Height	Wt.	Height	Wt.
60	120	67	134	73	176
61	120	68	141	74	183
62	120	69	148	75	190
63	124	70	155	76	197
64	128	71	162	77	204
65	130	72	169	78	211
66	132				

The mess. In connection with the matters of eating and drinking a few suggestions concerning the mess are not out of place.

Keep flies off your food. They are great germ carriers. If you see a fly in mess hall or barracks, kill it. If you see flies clustered around a heap of refuse food remove the refuse and they will disappear. Keep sugar bowls and all other receptacles covered. These remarks apply also to cockroaches.

Use your own mess kit and drinking cup. After eating wash them thoroughly. It isn't sufficient to wash them in warm water. This may contain germs from other men's utensils and you can't wipe them all off. So the last step should be to immerse your utensils in *boiling* water—there are no live germs in boiling water. Then let them dry in the air, or dry with a towel you know is clean. In a proper mess boiling water is provided—if not somebody is neglecting an important duty. When your kit is washed keep it away from anything which might contaminate it.

Never eat any food which you suspect is spoiled. This produces serious illness called "ptomaine poisoning."

Don't throw waste food around indiscriminately. Deposit it in the cans provided.

Wash your hands before going to mess.

If you are on duty in the mess take particular pains that your clothing and your person, especially your hands, are scrupulously clean at all times. See that food is properly stored and protected from heat and insects, that no filth collects, no vermin live and no dirty utensils are used in any kitchen where *you* are on duty. Make up your mind that no polluted food will ever be served to your comrades through any fault or neglect of *yours*.

Drinking. Water frequently contains harmful germs. Therefore do not drink any water unless you are sure it is pure. You cannot tell this by seeing or tasting it. The methods of purifying water are discussed later. A common method in the field is to boil it, and this you can do yourself.

Drink from *your own cup*, glass or canteen only. Sterilize all of them occasionally with boiling water. Don't dip your own cup into water intended for everybody. Don't put your mouth over a tap (faucet) in drinking.

Avoid intoxicating liquors. In these days they are very apt to be poisonous as well as intoxicating. They often contain wood alcohol, which causes blindness and death.

Don't drink soda or "pop" except at places you know are clean and sanitary, and in any case don't drink such things to excess.

Drink a moderate amount of water with your meals and all you wish between meals. There is little danger of drinking too much water. Most people do not drink enough. You should drink enough water so that you perspire freely and so that your urine is habitually of a *pale yellow color*, not a dark orange, even in hot weather. Drink water at short intervals, but not an excessive quantity at one time.

Hot drinks are beneficial. A moderate amount of hot coffee or tea with meals is proper. Hot water drunk occasionally, especially before breakfast, is most beneficial.

Be especially watchful of water supply in the field, where it is much more apt to be polluted than in a post or city.

Sleep. Sleep is a part of nature's process in the maintenance of health. Loss of sleep rapidly lowers one's vitality, as we all know well.

The average grown man requires about 8 hours sleep per day, some a little less. It is well to take your sleep regularly at the same hours. It is more beneficial so. And if you try to sleep at irregular hours, when others are up and about, you will be frequently disturbed.

But if you are behind on sleep, take advantage of any opportunity to catch up. Even an hour's nap in the daytime will help wonderfully.

Sleep should be taken under favorable conditions, so that you will get the utmost benefit from it. This means especially plenty of fresh air—good ventilation and no crowding in tents, quarters or hospitals. A cold room is best for sleeping, but you should have enough bedding, both underneath and on top, to keep you warm. Do not sleep on cold, damp ground. If necessary to sleep on the ground, spread out some hay, straw or tree boughs and cover with a blanket, or spread your raincoat

or poncho on the ground with a blanket on top. Put on night clothes when practicable, don't sleep in your underclothes, and never go to sleep in wet clothing. Keep your head out of cold drafts—it is possible to have good ventilation without drafts on your head. Air your sleeping quarters during the day. Air your bedding at every opportunity.

Clothing. Wear clothing appropriate to the climate in which you are serving. Put on an overcoat when you go out in cold weather and take it off when you enter a heated building.

Your clothes should fit properly but loosely. Avoid tight collars, belts, waistbands, leggings, etc.

Wear clean clothes. If you cannot get proper laundry service wash your own clothes. Air your clothes during the night. Soiled clothes promote skin troubles. Also they often contain tetanus (lockjaw) and other germs, which will be driven into your body if you are wounded. Clothes which have become infested with lice, or the germs of any disease, must be boiled or steamed to kill these germs. It isn't sufficient to merely wash them in warm water.

For shoes and socks see Care of the Feet.

Bedding. Your bedding, like your clothing, should be clean. It is not practicable to wash bedding as often as clothing, but it should be aired frequently, in the sun. Sunlight kills disease germs. Air your bedding (in the sun) at least 2 hours a week, and oftener if possible.

If your bed or mattress become infested with bugs have them disinfested.

Tents. Always ditch your tent as soon as it is put up, even if the camp is for one day only, and the weather fair. Otherwise a little rain may ruin a night's rest.

When weather permits roll up your tent walls to admit air.

Prepare your bed before dark. Use a cot if you have one, otherwise some straw or branches, leaves, etc., with a blanket and poncho over them. In any case sleep on your poncho or raincoat.

Exercise and recreation. All our muscles are kept in order, and all our bodily functions work better if we take a proper amount of gentle exercise. Usually the soldier will obtain enough exercise in the performance of his regular duties. But in periods of inaction this should be supplemented. Learn to play some sensible games, such as baseball or boxing, and join in with your comrades. If nothing else is going on take a walk with a friend.

A very little moderate exercise will keep you fit. Very violent or long continued exercise is bad. A tired feeling, which makes you sleep soundly is excellent, but exhaustion which is actually painful is also harmful. Play games which do not cause exhaustion—baseball is better than a rowing race, boxing is better than wrestling. Any exercise which produces distressing breathlessness strains the heart, and is hurtful. But if you become breathless too quickly it is a sign you need more exercise. Take it, but start off moderately, and gradually increase to what is normal for a man in good physical trim. And finally, to enjoy perfect health you need exercise, but you do not have to be an athlete.

Recreation means some form of pleasurable relaxation as distinguished from work or duty. "All work and no play makes Jack a dull boy," says the proverb. If we take no recreation we often get to brooding, or thinking too much about ourselves and our troubles.

Recreation may take the form of athletics or of indoor games or light reading. Always take your recreation with a comrade, a man or a girl or several of them, if possible. There is nothing that keeps up our morale or dispels "the blues" so quickly as good company. After a little wholesome recreation you will find that it is a pleasure to take up your work again. If your work is becoming distasteful it is a sign that you need either a change of work or recreation. Try the recreation first.

Worry. Worry or brooding over troubles or often imaginary troubles, lowers our efficiency, makes us unhappy, and if persisted in often brings on mental disorders.

If you have real troubles think them over intelligently, decide what it is best to do, and then cease worrying. Worry does no good, but lots of harm.

We all have an occasional tendency towards worry, so do not think you are the only one who is unhappy. When you get to feeling sorry for yourself you are in a bad way. Fight it off, get up and go out with the boys.

Wet and cold. Wet and cold are not harmful in themselves. But if your body is chilled below its proper temperature it lowers your vitality and your power of resisting disease. Disease germs are nearly always present everywhere. There are nearly always some on or in your own body. If your vitality is high your system successfully fights them off. But if your vitality is down the germs may get the better of you and make you sick.

Therefore wear enough clothing and use enough bedding to keep you comfortably warm. If you get wet change your wet clothing as soon as possible, and above all don't go to sleep in it. Shoes and socks are, of course, especially apt to get wet. Change them promptly. Wet clothes first bring on colds, and colds are the forerunners of many other diseases.

Vermin. Vermin include lice, fleas, bed-bugs and other insects which infest the head and body. They are loathsome and cause great bodily discomfort. But in addition to this they promote skin troubles and are the direct cause of such terrible diseases as typhus fever and bubonic plague.

The best security against vermin is to keep your body and clothing clean. Change your underclothing at least twice a week. If vermin are prevalent in the places where you are serving and cleanliness does not rid you of them, you should be "de-loused," and your clothing "disinfested." In a military organization facilities for de-lousing and disinfestation of clothing are provided.

If an itch develops on your skin it is often due to vermin. Go to the doctor.

Do not put on any dirty clothes or sleep in soiled bedding or bedding that has been used by somebody before you, even if it is apparently clean. In a hotel or rooming house insist that clean sheets and pillow case be supplied to you.

Mosquitoes. Mosquito bars. Mosquitoes transmit yellow and malarial fever by their bite. So if there are mosquitoes about use your mosquito bar at night. See that there are no holes in it, and that it is tucked under the mattress all the way round. Then make certain there are no mosquitoes inside.

Mosquitoes breed in water which stands for a few days. Therefore do not let water stand in any vessels in your quarters or mess. Empty such vessels every few days, rinse them out and refill with fresh water.

Prophylaxis. A number of diseases are now prevented by treatment known as prophylaxis (vaccination and injections of serum). Chief amongst these are small-pox, typhoid and para-typhoid fevers. You are required, in the army, to take these treatments. If you have been overlooked speak to your 1st sergeant, officer or doctor. These prophylaxes have been carefully tried out and proven to be almost certain preventives. It is for your own sake as well as a measure of duty, that you should take them.

Venereal diseases. Venereal diseases are easily contracted. They are probably responsible for more loss of efficiency and more unhappiness than any other diseases.

Venereal diseases are contracted in just one way—by unlawful sexual intercourse. And so the evident and only way to avoid them is to refrain from such intercourse, which is not necessary to your health, is unmanly, and more degrading to decency and self-respect than anything else you can do.

You are entitled to some pleasure—but let it be clean, wholesome, healthful, manly, and uplifting. The society of girls is excellent, provided they are the right kind—the kind you are not ashamed to be seen with or to introduce to your friends, your sisters or your mother. A good girl is just a little bit less than an angel. Remember this, and treat her accordingly.

If you have been so foolish and unmanly as to indulge in unlawful sexual intercourse, go at once to the surgeon of your organization or your regular doctor. Don't attempt to doctor yourself, and keep away from the quack "specialists" who adver-

tise in the newspapers, They are too often more interested in your money than your cure.

Precautions on entering battle.

a. Bathe and don clean underwear.
b. Do not eat or drink anything just before the action, but void the bowels and bladder. Wounds of the abdomen are less apt to have serious consequences if the bowels and bladder are empty.

c. Carry a canteen of sterilized water.

d. Be sure you have a first-aid packet.

First aid. For procedure in case of wounds or other injuries see First Aid.

Care of the Feet.

Next to his head a soldier's feet are the most important part of his anatomy, and deserving of special mention. Marching is usually a soldier's chief duty, and if

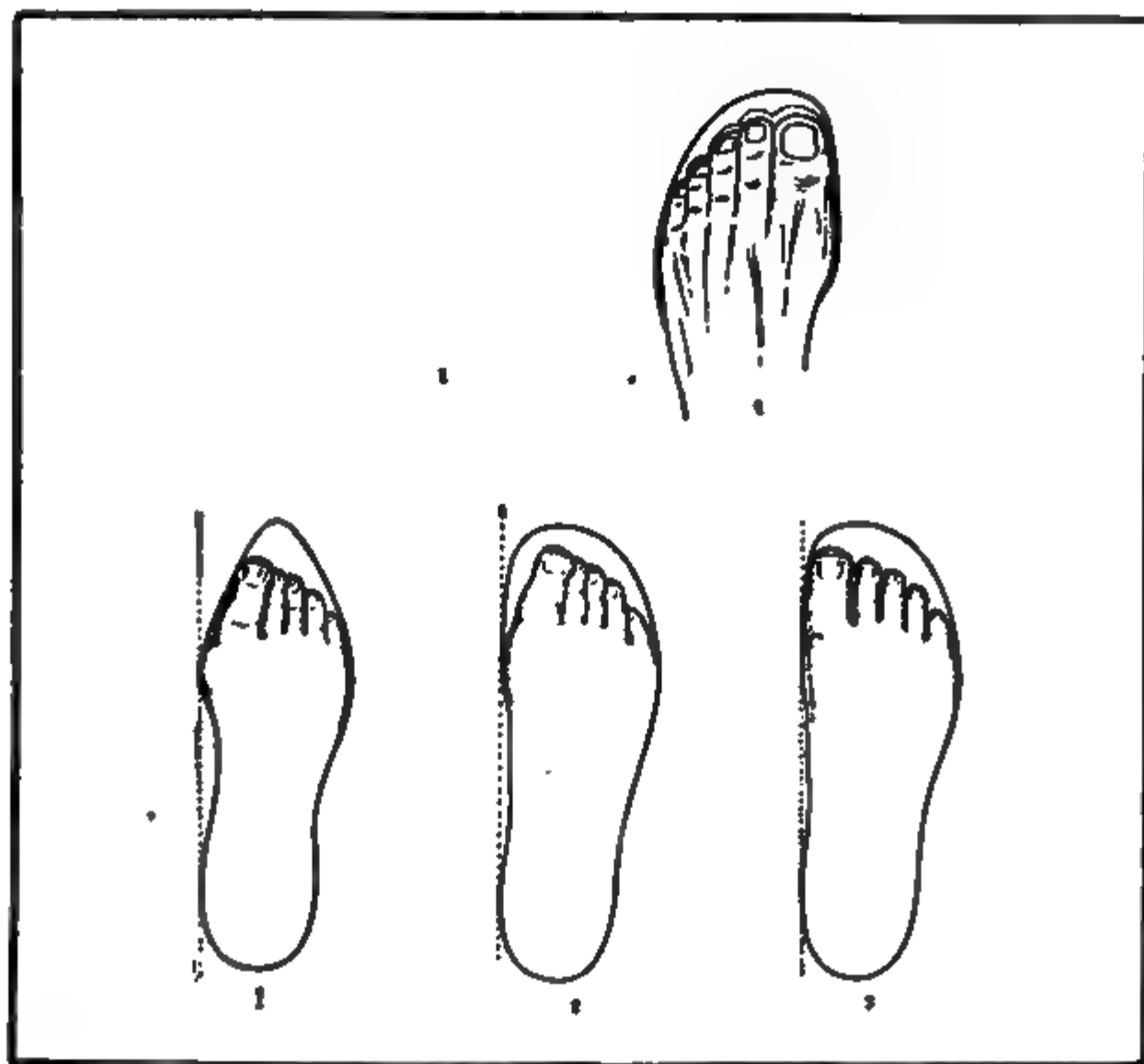


PLATE 250.—The Effect of Shoes on the Feet.

Above. 1. The effect of a too short shoe.

2. A good foot in a properly fitting shoe.

Below. 1. The effect of the typical civilian shoe on the foot.

2. The civilian foot introduced to the standard army shoe.

3. The foot restored to a natural and healthy state as a result of proper fitting of shoes.

his feet are in such condition that he cannot march he is useless as a soldier. And the soldier, himself, is the one chiefly responsible for the care of his own feet.

The feet should be kept warm, dry and clean, free from blisters, abrasions, corns, bunions, callouses and ingrown nails.

The first requisite is good shoes of the proper pattern and size. Civilian shoes, especially sharp-toed or low shoes, are unsuitable for marching and almost sure to ruin the feet. Only the standard army marching shoe should be worn.

The correct size is a matter of the greatest importance. Recruits seldom know their own sizes. Moreover sizes in civilian shoes vary, and are not the same as army sizes.

It is difficult to fit shoes properly, and the hap-hazard method of asking the recruit his size and trying on several near-sizes results in many misfits. Of 59,000 soldiers examined during a survey, 71 per cent were found to be wearing shoes too small for them, and only 19 per cent had the proper sizes.

The army has a machine and system for accurately determining shoe sizes, and it should be used when recruits are first fitted. The size thus found should be recorded and the soldier himself should remember it. Measure *both* feet and select shoes to fit the larger foot.

A shirt which is too small may be uncomfortable, but a shoe which is too small is dangerous.

The best socks are light or heavy wool. In cold weather or if the feet tend to chafe, two pairs of socks may be worn. Socks should be large enough to permit free movement of the toes in walking, but not so large as to cause wrinkles. On a march never wear socks with holes in them, or which have been darned. Darned socks may be worn in quarters or camp.

Never go on a march in new shoes. Break them in to fit your feet by wearing them several hours a day for a week or so. Use the stretchers provided if your shoes are tight at any place.

Shoes may be waterproofed by application of neatsfoot oil.

Keep your feet clean. Wash them frequently, changing socks. Keep the nails trimmed. Always wash your feet and rub briskly with a towel, at the end of a march.

The feet may be hardened by washing in a solution of salt and alum. If they tend to chafe, dust them with foot powder before putting on socks. A supply of this powder should be on hand in every company. Do not use the powder unless you find it necessary.

If your feet become wet and chilled remove your shoes and socks, wash the feet in cold water and massage them. Then put on dry footgear.

If blisters appear open them with a pin (sterilized with a match) by pricking the edges. Then cover the blister with zinc oxide plaster, applied hot.

If you cannot keep your own feet in order, and have serious abrasions, corns or bunions, or ingrown nails, apply to the doctor for treatment.

THE CAUSES AND PREVENTION OF DISEASE.

Prevention and cure. The old proverb that an ounce of prevention is worth a pound of cure, applies to nothing quite so well as to sickness and disease. It is far easier and infinitely better to prevent disease than to cure it after it is upon us. It is less difficult and expensive to stay well, than to be cured of sickness.

Disease can be prevented. One may naturally ask then, why do we not prevent *all* disease? The answer is that we have made very notable progress in that direction. We *do* prevent disease to a very great extent. In the army, for example, we have practically eliminated typhoid fever, formerly known as "the scourge of armies." It is no longer the scourge of armies. There are many diseases which we can surely prevent. But there are many others for which as yet we know no certain preventive. Even these we can prevent to a great extent. Some diseases are more difficult to prevent than others. Moreover to prevent disease on a large scale in the army or in civil life requires that the doctors be given great power, and that all soldiers or citizens co-operate to help them. That is we should all know something of the causes of diseases and what we ourselves should do to prevent them, and then we should conscientiously do these things. If we would all do what the doctors tell us to do there would be much less sickness than at present and finally disease would become a rare thing. But the doctors do not as yet have all the power they should have. They cannot reach all the people in time to prevent sickness. And because of ignorance, indifference or laziness the majority of our citizens fail to do

their share in preventing disease. Most of us do not worry about sickness except when we are sick. And if we are cured we again promptly forget all about it.

What we chiefly need is *education* of our citizens in a knowledge of the importance of preventing disease, to win their sympathy and co-operation in the public and individual measures necessary. In the following pages we will tell you the facts that every citizen ought to know and the things he ought to do to prevent disease, both in himself and others. If you will do these things and if you will persuade a few others to do them, you will be performing a service to your country. Because some 600,000 people die every year in this country from diseases that *we know how to prevent*, and over 30,000,000 wage earners lose about 300,000,000 days a year because of sickness—most of it preventable.

The doctors tell us what to do. They put out all kinds of regulations. But unless we do what we are told their efforts are useless. The *cure* of disease is the duty of the doctors. But that which is of much more importance, the *prevention* of disease, is at least equally the duty of every soldier and every citizen.

THE CAUSES OF DISEASE.

In order to prevent disease it is first of all necessary that we should know its *cause*. If we do not know the cause we are, of course, helpless to prevent it. We have learned in recent years, chiefly as a result of our experiences in war, a great deal about the cause and prevention of diseases.

*Germ*s. Practically all acute diseases and many chronic diseases are caused by living organisms which are so small that they can be seen only with a powerful microscope. They are commonly known as “germs.”

Acute diseases are those which come upon us usually quite suddenly, run a rather short and definite course, and then leave us, either dead or alive. Chronic diseases are those which are known as “lingering.” They come on slowly, have no definite course and afflict us for a relatively long and indefinite period, often permanently. Some diseases are acute in their early stages and may later become chronic.

Communicable diseases. When the germs of a disease are transmitted from the body of a sick person to that of a healthy person, the latter may be afflicted with the same disease. Diseases which are transmitted in this way (and the great majority of them are), are called *communicable diseases* because they are or may be *communicated* by one person to another.

Each disease has its own particular germ, and these germs are very different in their characteristics. They are transmitted from sick people to healthy people in various ways, and these avenues by which germs are transmitted are well known to the doctors. They should be well known to every citizen in order that every one of us may protect ourselves and others by blocking these avenues. The usual avenues by which germs gain access to our bodies are as follows:

The Means of Transmission.

1. Through our mouths and alimentary (digestive) tracts, into our stomachs and bowels. These germs commonly enter our bodies with the water we drink or the food we eat, though a polluted finger placed in the mouth may also transmit them. The diseases produced by these germs are hence commonly called *water-borne* diseases. Amongst them are typhoid and paratyphoid fevers, dysentery and cholera. It is because of these diseases and the mode of transmission that all civilized communities are so much concerned with the purity of their water supply. Years ago we thought typhoid was caused by raw oysters. It is, as oysters often feed on sewage, but this is only one of many ways of catching typhoid.

2. Through our noses, mouths and breathing tubes into our throats and lungs, these germs are borne on the air we breathe, and the diseases they produce are commonly called *respiratory* diseases, because they result from breathing air in which germs are floating. Amongst the respiratory diseases are pneumonia, con-

sumption (tuberculosis), influenza, bronchitis, tonsilitis, diphtheria, measles, scarlet fever, mumps, whooping cough, meningitis—certainly a dreadful array.

3. By the bites of insects infected with the diseases. Amongst such diseases are yellow, malarial and dengue fevers, transmitted by the bite of the mosquito; typhus and trench fevers, transmitted by the bite of the louse; and bubonic plague, transmitted by the bite of the flea.

4. By direct personal contact with an infected person or with polluted excreta from his body. Amongst such diseases are smallpox, chicken pox, and all the venereal diseases, the latter usually only by sexual intercourse. Soiled bedding, towels, handkerchiefs will transmit the disease without immediate personal contact. Vermin are also transmitted in this manner, though they are not germs. But they may be the cause of the diseases in the preceding class.

Amount of the risk. When we consider that a person with typhoid discharges countless millions of germs in his urine and stools, that flies may carry these germs long distances and deposit them on your food; when we consider that a consumptive fills the air around him with germs every time he coughs or sneezes or even breathes; when we consider that a mosquito who has bitten a yellow fever patient may come at night and bite you as you sleep; when we consider these and a thousand other similar possibilities or *probabilities*, we can understand how grave and continuous is the risk and how great the need that we should be ever on our guard against these terrible maladies which can strike us so swiftly and secretly, like an unseen hand of death. And how utterly helpless we would be had not the medical profession by years of patient study and often the sacrifice of their own lives, discovered these most vital of truths.

The symptoms of communicable diseases. Diseases are identified by the presence of the specific germs which cause them. This can be done only by the doctor with his "germ culture" and microscope. But they may also be identified by certain appearances or sensations of the patients, which usually occur in the early stages of the diseases, such as a rash on the skin, sore throat, fever, etc. These signs are known as the "symptoms" of the diseases, and in various combinations enable the doctors to identify or "diagnose" the diseases. They are nature's warning signals, which all may see and which all should heed.

The layman, that is all of us who are not doctors, can hardly expect to recognize all of the many diseases from their symptoms—even the doctors frequently make mistakes. But if one knows in a general way what these symptoms are, and their number is not very great, he can properly assume that a person exhibiting these symptoms is *probably* suffering from a communicable disease, though he may not know just which disease it is, and he should see that the proper precautions are taken. If it turns out that he is mistaken in his suspicion, no harm has been done.

We will not discuss in detail the particular combinations of symptoms which identify particular diseases. It is not safe for a layman to attempt "diagnosis." But let us see what are the more important danger signals by which nature gives warning of the presence of communicable disease.

Fever. Fever, or rise of temperature above normal, is the most common symptom of disease. A man who is feverish is usually aware of the fact, and should give notice of it for his own sake and that of his comrades. Fever may be detected by the characteristic "feverish glare" of the eyes and by a flushed and hot skin. A "clinical thermometer" will settle the question beyond doubt. Insert under the tongue or in the rectum.

Eruptions of the skin. These are also common symptoms of communicable diseases, many of which have an eruption or rash of characteristic appearance in their early stages, blisters or pustules, etc.

Pulse. Any departure from the usual rate or intensity of the pulse may be a symptom. A rapid pulse is of course a common accompaniment of fever.

Other symptoms. Other symptoms of communicable disease are:

Sore throat.	Coughing.
Coated tongue or throat.	Vomiting.
Fetid breath.	Excessive sweating.
Inflamed or watery eyes.	Pallor of the skin.
Backache.	Chill.
Headache.	Aching of the joints.
Nausea.	Swelling of salivary glands.
Colds.	Etc., etc.

It is to be remarked that communicable diseases are characterized by a *combination* of symptoms. Thus a fever or rise of temperature if *unaccompanied by other symptoms* will probably be due to some minor derangement. If it be accompanied by an eruption of the skin the possibility of its being a symptom of communicable disease is greatly increased, and if to this we add sore throat it becomes highly probable that the patient is suffering from communicable disease. In any event it is well to take no chances but to bring the case promptly to the attention of a doctor.

THE PREVENTION OF DISEASE.

Immunity. Prophylaxis.

The human body is a little fort or stronghold for the battle against disease. Not all the disease germs which enter our bodies actually cause disease, in fact in the majority of cases they do not. Our bodies have the power of overcoming these germs and casting them out. We are exactly like a fort. If the defenses are strong and well kept up, and the garrison brave and active, the attacker is usually repulsed. But if the defenses are broken down and neglected and the garrison weak and dispirited the enemy easily captures the stronghold. In plain words this means that if we are perfectly healthy and our vitality is high we have great power of resisting disease—we are less apt to be stricken and more apt to recover if we are stricken. *To keep up our general health and strength is accordingly the best insurance against all forms of disease.*

Certain diseases have the peculiar property of conferring *immunity against future attacks of the same disease*. If you have had yellow fever and recovered it is practically certain that you will never have it again, no matter how often you are exposed to it. You have become what we call an *immune*.

Acting on this hint the doctors have learned to protect us against certain dangerous diseases by actually inoculating us with a mild form of the disease, which renders us immune to real attacks. This is one of the greatest achievements of preventive hygiene. The medical profession is continuing its progress in this line. At present they have discovered almost certain preventives of smallpox, typhoid and para-typhoid fevers. The treatment is known as vaccination or prophylaxis (prevention), and in the army all soldiers are required to take these treatments.

In other cases we are protected against disease by inoculations of anti-toxins which fight the germs, usually for a rather short period, and either ward off or reduce the severity of diseases. A notable example of this treatment is the anti-tetanic prophylactic serum given to the wounded to ward off lockjaw. Some of these treatments are given prior to the outbreak of disease, others during its course.

General Preventive Measures.

Knowledge is power, and armed with a knowledge of the foregoing facts the prevention of disease, so far as the layman's part in it is concerned, becomes merely the application of a few rules of ordinary common sense. When we know definitely the *cause* of a disease, we can take definite measures to prevent it. Lacking such knowledge our ancestors of many years ago were almost helpless in the presence of an epidemic. They did not know how to fight the enemy or ward off the unseen hand of death. To-day we know how to fight and the hand is no longer unseen.

There are many precautionary measures to prevent the outbreak and the spread of disease. All the rules of personal hygiene, which we have heretofore discussed, are included amongst these measures. In a general way they may be divided into 3 classes, as follows:

1. All measures designed to maintain the health and vitality of the individual, thereby reducing his susceptibility to disease. To a great extent this is the duty of the individual himself, and the things he should do or refrain from doing are discussed under Personal Hygiene.

2. Conferring personal immunity upon the individual. This is accomplished by means of prophylaxis, as heretofore explained.

3. Measures designed to destroy, reduce, and prevent the spread of the micro-organisms which cause communicable diseases.

This third class includes a number of very important measures, in which the individual must play his part. A communicable disease is spread by the transmission of germs from a sick person to a well person, and this must be prevented. What are the common sense measures by which it may be done?

Quarantine.

When an individual shows signs of a communicable disease it will evidently be very wise to separate him from other persons and to place him where it will be possible to prevent the spread of germs from him to others. It will evidently also be wise, in many cases, to close the premises where the patient has lived to take possession of all his effects, or any utensils he may have used, and to thoroughly fumigate or disinfect all of these to destroy any germs there may possibly be on them. It will further be advisable to similarly isolate or at least to keep under observation, all other persons who may have been exposed—for example men who have been sleeping near the patient. These “suspects” should of course be kept away from those known to have the disease.

These precautions taken as a whole, are known as “quarantine.” The exact procedure will vary somewhat with the disease and the circumstances, and it will be decided by the doctors. The individual can assist in this procedure, first by promptly reporting when he himself is sick, or when he observes anybody exhibiting suspicious symptoms, by keeping away from sick people, by reporting any possible contact or exposure, and by strictly observing the special orders which the doctors may give in any case.

Other Precautionary Measures.

The doctors do not always wait until a marked case of disease develops. If it be known that there is disease in a neighboring town they may place the town “off limits” for soldiers, and perhaps isolate and examine men who have been in the town recently. They may disinfect or fumigate all quarters, and perhaps even physically examine all the men of an organization and isolate all “suspects.”

The doctors closely watch the “sick-list” or number of men sick at any one time. A mounting sick list is a plain danger signal of an impending epidemic. Even though the sickness is not contagious a high sick list indicates that the vitality of the command is low, and it is ripe to fall a victim to disease.

Many persons carry the germs of disease without themselves being sick or exhibiting any of the symptoms of the disease. Such persons, known as “carriers,” are of course extremely dangerous. They can be detected only by a medical examination. In particular all persons who have anything to do with the *preparation or serving of food* should be frequently examined to make sure that they are not carrying disease germs.

New individuals coming into any community usually furnish new sources of infection, and are themselves more susceptible to the diseases of the community than its older inhabitants. Accordingly men of different commands should not be quartered together, and recruits or replacements should be quartered separately from the older members of the command, until they have adjusted themselves to their new surroundings.

Over-crowding and lack of proper ventilation in quarters are conditions highly favorable to the development and spread of disease. In case of epidemic or threatened epidemic radical measures should be taken to improve any bad conditions as to ventilation.

Flies, mosquitoes and all forms of vermin are disease carriers. They should be thoroughly suppressed and eliminated.

Extreme precautions should be taken to see that food contamination is prevented. Messes, and all personnel connected with them should be scrupulously clean. Especial attention should be given to the proper washing of kitchen utensils and individual mess kits.

Dust in quarters should be prevented, drinking water protected, quarters properly heated, etc.

Individuals should at all times observe the rules of personal hygiene. Medical and other officers will be especially vigilant to see that they do so during epidemics. These rules we have discussed. *All of them are applicable.*

These measures of precaution to prevent the spread of disease may be pretty well summed up in one word—cleanliness. Waste material of all kinds affords favorable breeding places for the germs of disease. All wastes should be disposed of in such manner that they cannot possibly spread these germs abroad, and everything should be kept scrupulously clean.

In general, officers and men must co-operate to eradicate all conditions favorable to the spread of disease. *Uncleanliness is the most dangerous of these conditions* and in one form or another includes practically all of them.

Ease with which diseases spread. Because soldiers live in rather intimate contact, communicable diseases naturally will spread very easily if precautions be not taken. On the other hand soldiers are all young or middle-aged men, they are far above the average in health and strength because they are selected men, and military discipline makes it possible to enforce measures of precaution much better than in civil life when there is no such discipline. As a consequence a military organization usually enjoys much better health than an equal number of average civilians. But this will not be true unless all do their duty.

In order to give a definite picture of how ignorance and carelessness may spread disease, let us quote a single case.

Mr. Jones, an ignorant man, gets wet in a rainstorm, and does not change his clothes and shoes because he is too lazy. And so he catches a "cold," which makes him feel rather miserable and lowers his resistance. He goes to town, where he drinks some water he knows nothing about, or perhaps eats some raw oysters. The water came from a polluted well, or the oysters have been feeding on polluted sewage. Mr. Jones doesn't know this, and besides he doesn't care.

After a time he begins to feel quite ill. He should go at once to a doctor, but he thinks his illness will pass and he doesn't report it. *He has typhoid fever* but he doesn't realize it.

Jones goes out and defecates on the ground, because he doesn't feel like walking to the latrine. At the latrine there are screens and seat covers to keep out flies, and every day the pit is fumigated, or in a town the sewage is carried away by water and effectively disposed of. But the flies visit Jones' feces on the ground, and they then fly in a window somewhere and deposit the typhoid germs from Jones' feces on Mr. Smith's food. And Smith gets typhoid. "Mr. Smith" is only one of a number of unfortunates to whom Jones has transmitted his disease. An epidemic of typhoid might thus result from the ignorance or carelessness of one man.

Hospital measures. The following, taken from an official document of the War Department, will indicate the extreme precautions which are taken to prevent the spread of disease. These particular measures apply to the care of patients in the hospital, and to all diseases. They will be of interest as indicating the many avenues by which germs may be transmitted, and the common sense methods of guarding these avenues:

(1) SEGREGATION. 1.—Enlisted attendants. 2.—Army Nurse Corps attendants.

(2) SEGREGATION OR ISOLATION of different communicable diseases—particularly the respiratory type.

(3) MASK. To be worn by all attendants including surgeons, while on duty in the ward, and when practicable, by patients.

CAPS AND GOWNS. To be worn by all attendants, including surgeons, while on duty in the ward.

(4) CUBICLES to be provided for each patient.

(5) WHITE COTTON UNIFORMS OR GOWNS, for attendants.

(6) DISINFECTING of hands of attendants. Careful disinfection by Medical Officers passing from one case to another. (Changing gowns.)

(7) INANIMATE ARTICLES, bedding, clothing, to be disinfected before leaving ward.

(8) NASAL AND ORAL DISCHARGES caught on paper or gauze handkerchiefs and subsequently burned.

(9) PAPER BAGS at bedside to receive paper, gauze or soiled handkerchiefs.

(10) STERILIZATION of tableware and dishes after use and before leaving ward.

(11) DISINFECTION of waste food remaining on patient's dishes.

(12) FLOORS disinfected at least daily.

(13) DISINFECTION of clinical thermometers.

(14) Suitable ward temperature, and ventilation—most important in Measles and Scarlet Fever.

(15) Allowance of at least 1000 cubic feet per capita in hospital for communicable disease.

(16) IMMUNE ATTENDANTS will be selected whenever possible.

(17) *No nurse or attendant will attend two classes of communicable diseases.*

(18) A urinary examination will be made before discharge of the patient.

(19) All patients in the acute stages will use commodes or bed pans, especially those suffering with Scarlet Fever or Measles.

(20) All discharges from the bowels and bladder to be carefully disinfected, as also the urinals and bed pans used.

(21) Surgical dressings in certain of the communicable diseases, to be burned, viz.; Tetanus, Rabies, Erysipelas.

(22) Elimination of opportunity of "carriers" to spread infection.

Disinfection and fumigation. The usual methods of disposing of wastes are elsewhere described. Waste materials positively known to be infected, and all articles of clothing or equipment, utensils, etc., which have been used by or come in contact with infected persons, the discharges (pus, sputum, urine, feces, etc.) of such persons, the water used to wash or bathe them, the quarters or sick-rooms they have occupied, etc., should always be thoroughly disinfected or fumigated to kill germs. This should be done under the direction of a doctor.

All germs are killed by boiling water. There are a number of disinfectants and fumigants which are known to be very effective. Those employed as standard in the army, and the methods of using them are as follows:

Standard disinfectant solutions. (1) FORMALIN SOLUTION (5%); add 50 c. c. of formalin to a liter of water. This solution should be made when required.

(2) BICHLORIDE OF MERCURY SOLUTION (1 to 500); dissolve 2 grams, each, of mercuric chloride and ammonium chloride in a liter of soft, clean water. This solution should not be kept in a metal vessel.

(3) CRESOL SOAP SOLUTION (5%); dissolve 50 c. c. of liquor cresolis compositus in a liter of water.

(4) MILK OF LIME SOLUTION (12%); prepare as follows: Slake a quart of freshly burned lime (in small pieces) with three-fourths of a quart of water, or to be exact, 60 parts of water by weight, with 100 of lime. A dry product of slake lime (hydrate with eight parts, by weight, of water).

(5) CHLORINATED LIME SOLUTION (4%); dissolve 40 grams of good chlorinated lime, which has recently been opened, in a liter of water. This solution should be prepared as required.

Methods of disinfection. (a) FOR URINE. Use equal volumes of the standard solution No. 3, No. 2, No. 4, No. 5, or No. 1 ; time of contact, one hour.

(b) FOR FECES. Same as for urine, except that No. 2 solution should not be employed. The feces and solutions should be well stirred together.

(c) FOR PUS AND SPUTUM. Use equal parts of water and standard solutions No. 3 or No. 1 ; time of contact, one hour.

(d) FOR WASH WATER. Add an equal part of No. 3 or No. 5 ; contact, one hour.

(e) FOR BATH WATER. Add one part of No. 5 to 32 parts of water ; contact, one-half hour.

(f) FOR TABLEWARE. Boil for five minutes.

(g) FOR THE PERSON. Wash thoroughly with hot water and soap then follow with solution No. 2, diluted with three parts of water, or No. 3, diluted with four parts of water. For the scaling after eruptive fevers, anoint the body with 1 per cent carbolized oil.

(h) FOR UNDERCLOTHING, BED LINEN, TOWELS, ETC. Immerse in No. 3 solution for one-half hour, or boil for five minutes.

(i) FOR MATTRESSES AND PILLOWS. Use steam under pressure.

(j) FOR BEDS, TABLES, CHAIRS, FLOORS, ETC. Wash with equal parts of water and No. 3 or No. 2 solution.

(k) FOR BLANKETS, OUTER CLOTHING AND OTHER WOOL OR SILK FABRICS. These are damaged by boiling and should be subjected to steam under pressure.

(l) FOR WALLS AND CEILING. (1) When painted, wash with equal parts of water and solution No. 3 or No. 2. (2) When calcimined, spray or wash with equal parts of water and solution No. 3, or wash with solution No. 4. (3) When papered, spray or wash with equal parts of water and solution No. 3, then scrape off the paper and burn it.

(m) FOR ARTICLES OF FUR, LEATHER, RUBBER, HATS, ETC. These articles are injured by steam and must be disinfected with formaldehyde gas, or in the case of those not injured by wetting, by washing with solution No. 3.

(n) FOR ROOMS AND WARDS. While in use for infected cases, the room and its contents must be kept disinfected by the methods prescribed in the above paragraphs ; after patients are removed, the room should be disinfected with formaldehyde gas, followed by the various special procedures.

Nervous Diseases. Because of the almost continual strain and the abnormal conditions of life incident to military operations, nervous diseases are of frequent occurrence in the combatant forces. They result from a great variety of causes, including worry, anxiety, fear, homesickness, over-work and exhaustion, lack of recreation, seclusiveness and brooding, alcoholism and the drug habit, syphilis, shell shock or wounds, chronic low vitality from any cause, improper sexual or other habits, lack of regularity of life, unwholesome environment or uncongenial occupation long continued, etc. The natural preventives are good personal habits, regularity, good food, fresh air, sleep, exercise, association with comrades, wholesome recreation, and the cultivation of a cheerful frame of mind. It is the duty of all officers to keep a close watch on the daily life and habits of their men and to promote their welfare in every way, thus removing the causes which predispose to mental or nervous disorder or breakdown.

Deaths from Disease During the World War.

The following table showing the deaths from disease in the American Army during the World War, will be of interest as indicating the effects of modern sanitary measures, and the relative deadliness of various diseases :

Per Cent		Per Cent		Per Cent	
Pneumonia	83.6	Bright's disease	0.5	Scarlet fever	0.3
Meningitis	4.1	Peritonitis	0.5	Measles	0.2
Tuberculosis	2.3	Typhoid fever	0.5	All others	5.5
Empyemia	1.1	Appendicitis	0.4		
Septicemia	0.6	Heart disease	0.4		100.0

WATER SUPPLY.

Impure water is a cause of disease and intestinal disorders. Contrary to the popular impression it is not always possible to determine positively under field conditions, whether any particular water supply is potable (drinkable) or not. It is accordingly better to take no chances, but to purify the water if there is any doubt.

As to the usual sources, water from springs or deep, tight-lined wells is usually pure. Water from cisterns, shallow wells, lakes or streams, is very apt to be polluted, especially in a densely populated region.

Methods of Purification.

The methods of purification usually employed in time of peace, sedimentation (settling), precipitation (by chemicals), and slow sand filtering or mechanical filtering involving a considerable plant; are not applicable on any large scale in the battle area. They may sometimes be employed in more permanent camps in rear areas. Our new army organization includes water tank trains, by means of which water from unpolluted sources can be delivered to considerable distances, or polluted water is sterilized in relatively large amounts in the field, and subsequently delivered, where needed. Pure water may also be piped for considerable distances, and "water points" established along important routes. Impure water may be chlorinated at the source.

In the battle areas, however, organizations will frequently have to depend on themselves alone for sterilized water for drinking and cooking.

The field methods for purifying water (in small quantities) include portable filters or improvised sand filters, ozone and ultra-violet rays, boiling and chlorination. Of these the latter is easily the best, as it is very effective, requires little time and no heavy, cumbersome apparatus.

The apparatus for chlorination now usually employed consists of a canvas bag with taps (faucets) at the bottom and calcium hypochlorite put up in small glass tubes. The Lyster bag weighs only 7½ pounds and contains enough water to fill 150 canteens. (Plate 251.) It is hung from a pole or tripod, and the contents of a hypochlorite tube poured in. In the absence of a Lyster bag the contents of a hypochlorite tube may be placed in the canteens of a few reliable non-commissioned officers, who can then sterilize the contents of other canteens by pouring into them a teaspoonful of sterilized water. The only really essential item is the hypochlorite tube, and an organization should never be without a supply of these tubes.

When other means fail, boiling is always a sure method of sterilization. It has the disadvantages that it requires a fire, considerable time is required to bring the water to a boil, and thereafter to cool it off again. Boiled water may be cooled (in semi-permanent camps) without danger of pollution, by passing it through pipes packed in ice. This, of course, will not be practicable during active operations, and the water should be boiled at night, when it will be cool enough for use in the morning.

Sterilized water should be drawn from a tap (as in the Lyster bag) and not dipped.

Amount required. The *minimum* daily allowance of water for drinking and cooking only is from 3 quarts to 1 gallon per capita. For washing purposes

PLATE 251.—Lyster Bag for Water Sterilization.

at least an additional gallon will be required. In semi-permanent camps an allowance of not less than 5 gallons per capita per diem should be provided if possible. In permanent camps or barracks the daily consumption will be from 25 to 100 gallons per capita, or even more if not regulated. This of course contemplates piped water supply and water-borne sewage disposal, allowance for animals, scrubbing quarters, sprinkling, fire protection, etc.

Guarding the source of supply. The source of water supply, whatever it may be, should be guarded against pollution. The principal source of pollution is human and animal excrement (sewage). All waste matter, and especially excreta, should be kept away from the water supply, or from any place where it might be washed into the water.

If the source of supply is a natural body of water such as a lake or spring, the camp should be arranged so that latrines and animals will be as far from it as possible. Even the kitchens and tents of the men should not be very close. If the source of supply is a stream, use the upper part as a source of drinking and cooking water, next below for watering animals, still lower for bathing, and downstream for laundering.

If necessary a guard should be placed over the water supply to see that it is not polluted, and that men drawing water observe the instructions given.

Duties of Individuals.

Certain rules as to the use of drinking water have been given under Personal Hygiene. The soldier should do his share to conserve and protect the water supply.

- a. In drawing water from a natural source do not pollute the vicinity.
- b. Never urinate in or very near to a stream. It may pollute some organization's supply.
- c. Do not bathe or wash your clothes at or upstream from the place designated for taking water for the mess. Go downstream.
- d. If there is a special supply of water for drinking purposes do not use it for washing your hands or your dishes.
- e. If you are on duty in the mess see that water sterilized for drinking is placed in a container that is also clean and sterile. Keep such containers covered to exclude dirt and flies. Containers with taps (such as the Lyster bag) are much better than those from which the water must be dipped.
- f. Never allow your hands or any dirty utensil to touch the drinking water.

DISPOSAL OF WASTE.

Waste of all kinds, but especially putrefactive organic waste, such as human or animal excrements, dead bodies and kitchen garbage, affords a breeding place for flies and disease germs, and must be effectively disposed of. The presence of waste of any kind in the area occupied by an organization is a sure sign of poor discipline. However disagreeable the task of disposing of waste, it is still more disagreeable as well as dangerous to have it about.

The usual means of disposing of waste in the field are burying it in the ground and incineration or cremation. Of these the latter is the more effective. Disposal by means of water-borne sewage systems is usually impracticable near the front, but may be employed in the rear areas.

The principal organic wastes to be disposed of are manure of animals, human excrement and kitchen garbage.

Human Excrement.

The disposal of human excrement is one of the most urgent problems of military sanitation. To begin with, promiscuous defecation must be discouraged by very rigorous measures, and all men required to repair to the latrines both night and

day. The "privy" system, so characteristic of country life, is too unsanitary to be tolerated under whatever conditions in military operations. The objection to the privy is that the excreta is completely accessible to flies, who carry germs from the latrine to the kitchen. Tight, covered cesspools, or septic tanks, preferably of concrete, used in connection with a hopper type of bowl, preferably with flush water, are much better, but are seldom employed because of the labor involved in their construction. The bowl must of course be fly proof. The cesspool, when filled, is pumped out with an "odorless excavator."

Types of Latrines.

The simplest type of field latrine is a trench, 18 to 24 inches wide, and as deep as practicable (usually 5 to 8 feet), provided with a bar or rail on which the user rests his weight (Plate 252). Often no bar is provided, the users straddling the trench. The excreta is covered with dry earth, scoops being provided, and each man required to cover his own excreta. When the pit has been filled to within about 12 inches of the surface, it is discontinued and filled flush with earth. In

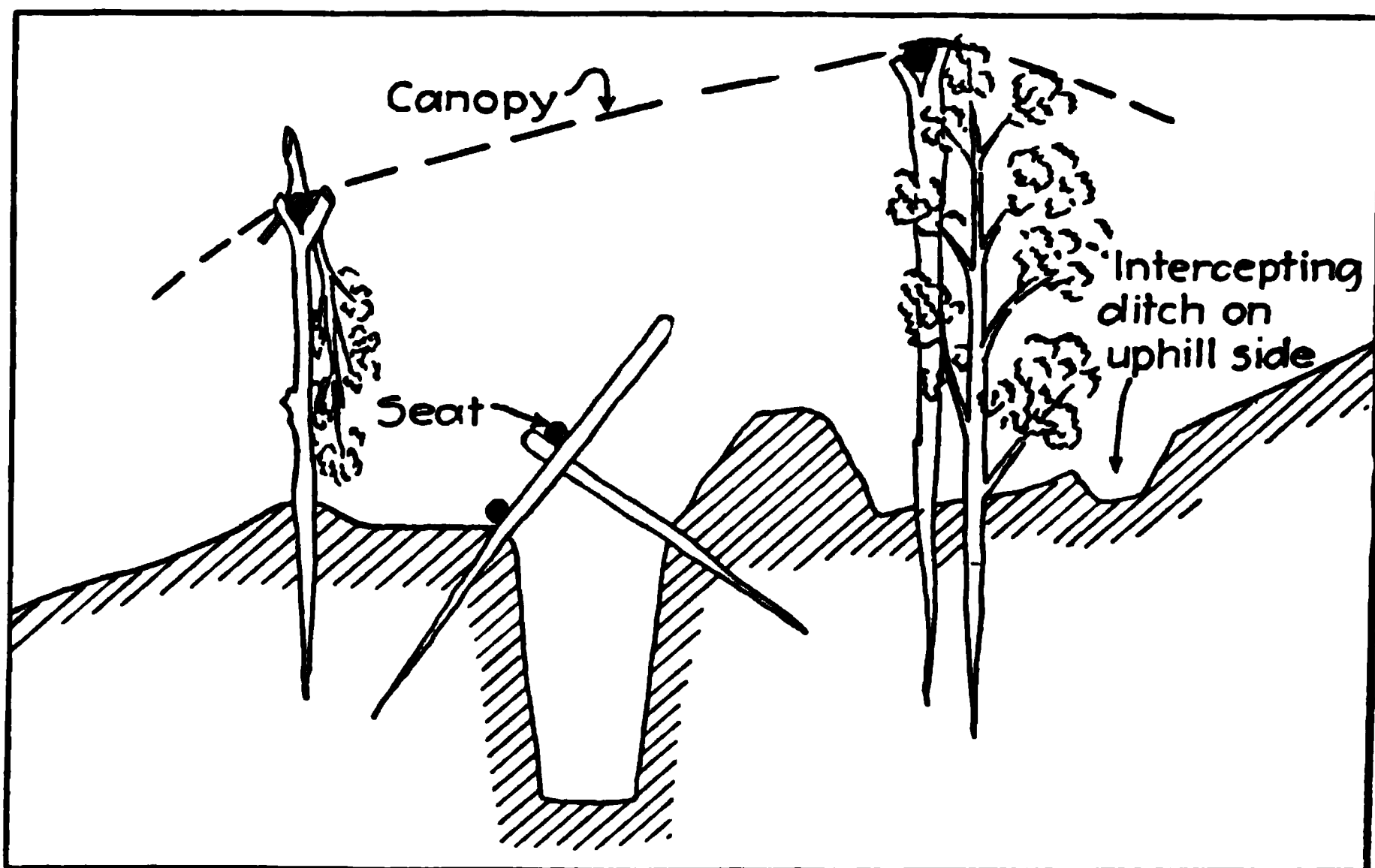


PLATE 252.—Dry Earth Latrine Pit.

temporary camps straddle pits are usually made narrower and shallower, 12 to 18 inches wide and 18 inches to 2½ feet deep. The pits should be on the opposite side of camp from the kitchens, as far as practicable from any source of water supply, and at least 75 feet from the nearest tent or other quarters. They should be on high ground or else storm water should be excluded from the pit by an intercepting or drainage ditch on the high side, as otherwise the pit might overflow and excreta escape during a heavy rain. For the sake of privacy latrines should be screened, and preferably provided also with shelter from rain. An orderly should be on duty at the latrine to keep it clean. At night lanterns should be provided sufficient to enable the men to find the latrine and to see the pit. In trench warfare dry earth pits are often placed in offsets from communicating trenches. Their presence close to parallels habitually occupied, is objectionable. If available, crude oil, kerosene, lamp black or creosol solution, sprayed or poured over the sides and bottom of the pit will discourage flies. Another desirable practice is to burn out the pit daily with straw and crude oil.

During the fly season any form of open pit is objectionable, as the excrement is seldom completely covered, and board covers with removable sections, or box seats

for the pit, should be installed. The edge of the pit should be curbed to prevent caving, to provide a close fit for the box and to prevent passage of flies. The back of the box should be sloped to the rear to prevent fouling with excreta, and a strip of sheet metal placed in front (inside) to divert urine into the pit. The holes

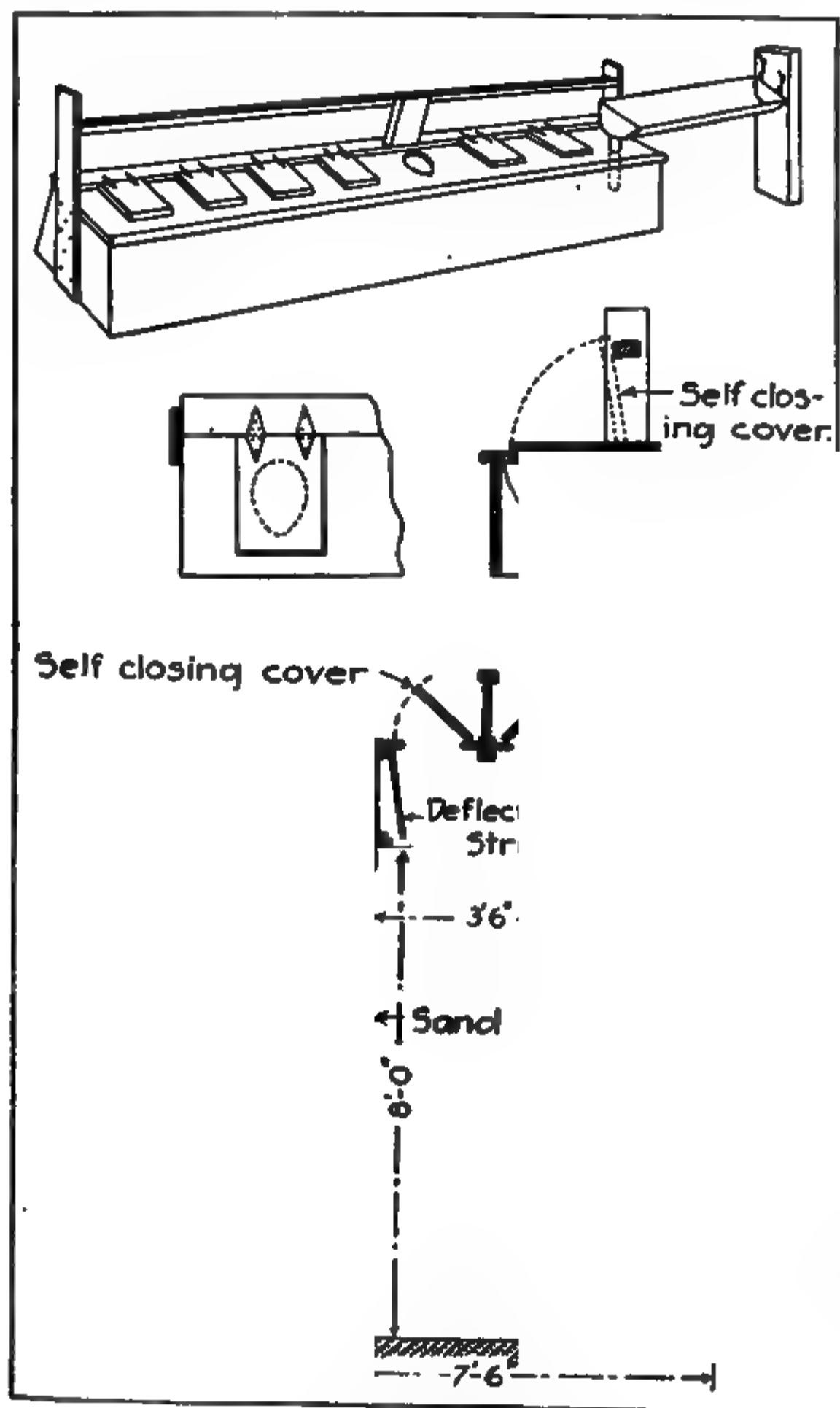


PLATE 253.—Fly-Proof Latrines.

should be oval, about 6 by 12 inches, rather than round, and provided with close-fitting, hinged, self-closing covers. Covers are made self-closing by means of a longitudinal bar, which does not allow them to be raised to a fully vertical position. They thus close by their own weight when the user leaves the seat. This arrangement also prevents the men standing on the seats. (Plate 253.)

A urinal trough of galvanized iron, emptying into the pit should be provided. When practicable latrines should be inside a rough building, screened if possible, or else kept as dark as possible since flies are not attracted to dark places. The pit, at least, should always be dark. The bottom and sides of the pit should be sprayed occasionally (usually daily) with crude oil, lamp black, etc. If these materials be not available the pit may be burned out. If the box be removed for disinfecting, care should be taken not to break down the edges of the pit, so that it will cease to be fly-tight. It is possible to spray or even burn out a pit without removing the box. The urinal trough should be scrubbed and oiled, especially if made of wood.

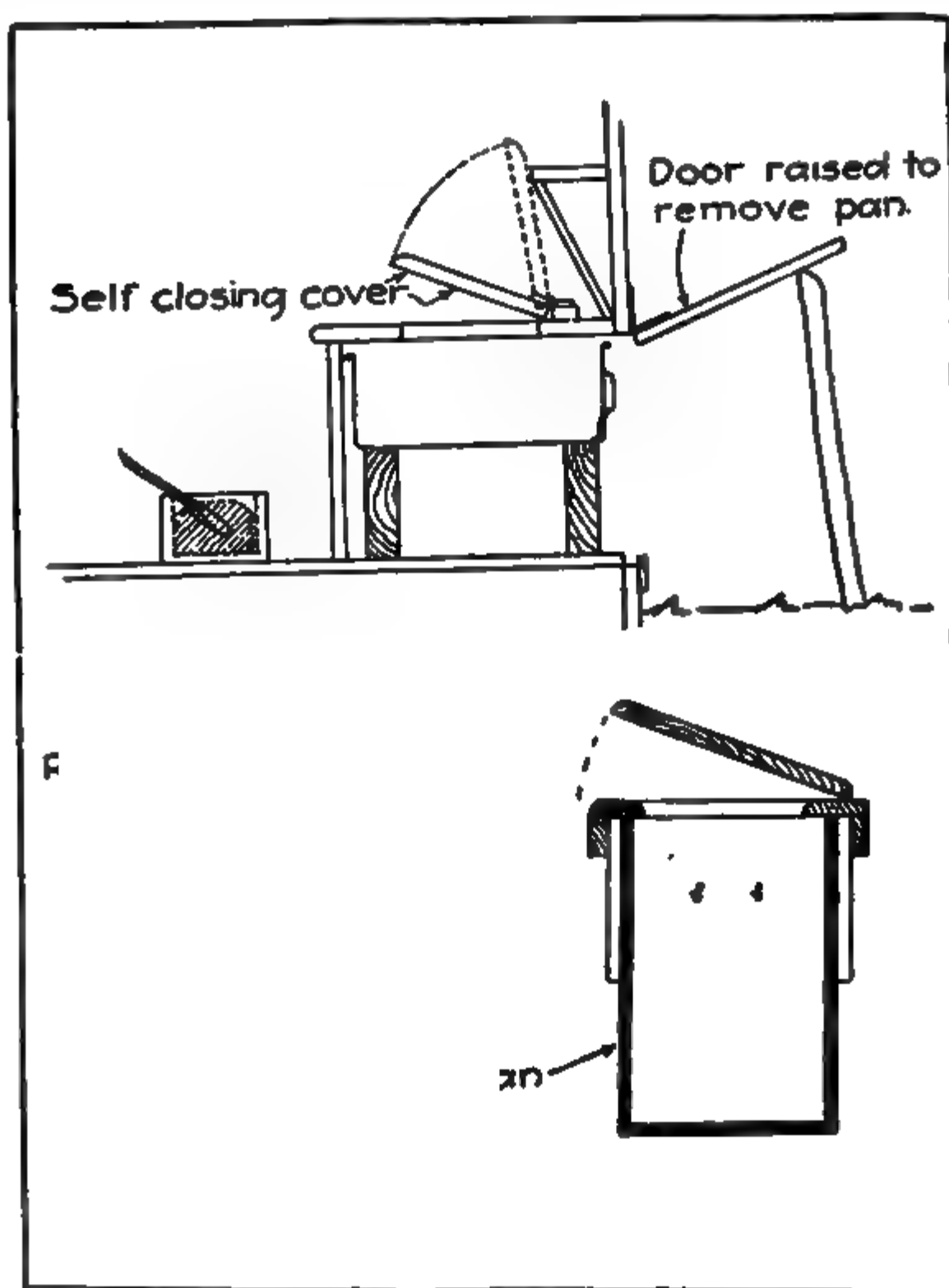


PLATE 254.—Dry-Earth Pan Closets.

Another type of latrine is that in which cans for the reception of the excreta are used in connection with box seats. The contrivance as a whole should be fly-proof, the back of the box being hinged so that it may be opened for the removal of the cans. (Plate 254.) The cans should be larger than the seat holes so that excreta will not fall outside of them into the box. They are emptied daily and should be cleaned and have a little water in them when replaced in the box.

Cans are also frequently employed in hasty latrines without fly-tight covers. In such cases each user should cover the excreta with dry earth. Dry earth cans are

often preferred to straddle pits in trench warfare, where they must be used in close proximity to the troops. They are usually less offensive, do not pollute the soil, and are not subject to flooding in case of a heavy rain. They should be of a size and shape to permit convenient removal to a distance, as the cans will usually not be emptied into other receptacles at the latrine. An individual can latrine, suitable for use in the trenches, is shown in Plate 254. When dry earth cans are provided a satisfactory form of urinal pit is one about 3 feet in each dimension filled with stone to near the top and then covered with straw and earth. A funnel or hopper and pipe convey the urine into the pit, and the device is fly-proof if a tuft of grass be placed in the funnel. (Plate 255.)

A number of types of combined latrine and incinerator have been devised. These machines are efficient in disposing of the waste products, but have the disadvantages that they cannot be used as latrines during the process of incineration and that their lack of portability is such that at the front they would seldom be on hand when needed. For use in semi-permanent camps, in rear areas, they have proved quite satisfactory. While incineration is a most effective means of disposing of excreta, it will seldom be practicable in mobile warfare.

Plug of

Layer of
matting
support
of sand

Broken
empty t
broken l

PLATE 255.—Urine Soakage Pit.

Urine cans (of a proper height) should be placed in company streets or near the entrances of shelters, at night, and their positions marked by lanterns. They should be removed and emptied at reveille.

Each latrine should have an orderly constantly on duty during the day. His duties are to keep the latrine in proper police, and to see that the rules of sanitation are observed by all users. This duty should not be given as a punishment.

Latrine seats should be washed daily, and disinfected at least once a week with creosol solution, or other disinfectant.

Seating capacity. The seating capacity to be provided varies from about 5 per cent to about 10 per cent of the strength of the command, according to conditions. The following hints will be useful in deciding upon the capacity to be provided in any case:

10% capacity is desirable.

5% should be regarded as a minimum. Less than this results in inconvenience and soil pollution.

5% will require a special arrangement of drill schedules (dismissing men at different times) to allow all to have access to the latrines.

More than 10 per cent capacity is undesirable, as requiring unnecessary labor and attention.

Stable manure. Manure is the favorite breeding place of flies. It should be removed from stables or picket lines daily and burned or removed to a dump remote

from camp. The ground from which manure has been raked should be sprinkled with crude oil or burned off. Prior to its incineration or removal, manure should be concentrated in large piles, closely packed, as the heat of fermentation thus developed prevents the breeding of flies. If the manure is scattered about in small piles, fly breeding is promoted. If there be a hot sun, however, the manure may be spread out in a thin layer and dried, which kills the larvæ and renders the manure practically impervious to the adult fly.

Animals should be kept segregated and away from that part of the camp occupied by the troops.

Kitchen Garbage.

Garbage may be collected in metal cans with tight covers, set on stands. The exteriors of the cans and the stands should be kept clean and whitewashed. When the cans are filled their contents are removed to an incinerator. The removal of garbage to a distance usually leaves a trail of slop through the camp, which is avoided if each kitchen has its own incinerator, in which case garbage may be placed directly in the incinerator, the latter being fired up once a day.

The simplest form of garbage incinerator is a shallow pit lined with stones. A wall of rock is built around three sides of the pit, the other side being left open for draft. (Plate 256.) Suitable dimensions for a company pit are 3 by 4½ feet by 1 foot deep. The pit may also be built in circular form, about 4½ or 5 feet in diameter, with a mound of rock in the center, against which the fuel is placed. (Plate 256.) In any of these types the fuel is placed in the pit. Dry or solid garbage is placed on the fire, and the liquid garbage is evaporated by pouring it slowly upon the heated stones. A closed incinerator may be built by placing a barrel in a stone-lined pit, covering it over with mud and burning out the barrel. A draft (chimney) is provided, and openings for the introduction of fuel and garbage. Still another type is

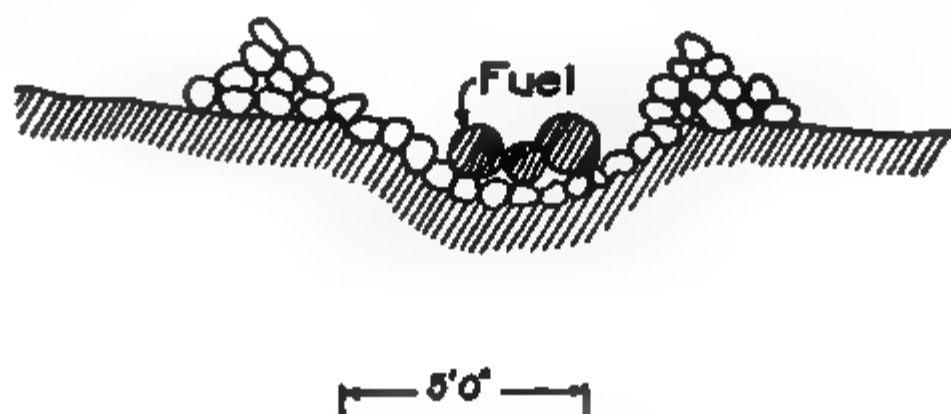


PLATE 256.—Pit Incinerators.

a frustrum of a cone, of sheet metal or sod, placed on a rock-filled pit. More elaborate types of furnaces for semi-permanent camps, may be built of brick or concrete, and provided with furnace doors, grate bars and chimneys. (Plate 257.)

Liquid garbage. Liquid garbage may be poured into soakage pits in porous soil. A good type is made with a cask, open at the bottom and partially buried in a rock- or sand-filled pit. The barrel should be provided with a cover. (Plate 258.) The liquid refuse may be passed through an improvised grease trap, which facilitates disposal by soakage, while the grease saved is of value.

Fuel is conserved by care in operating the incinerator. Solid garbage should be separated from the liquids, and placed on the fire a little at a time where it soon dries out and furnishes fuel for its own incineration. Avoid smothering the fire.

In the trenches, garbage is collected in cans and removed to the rear for burial or incineration.

Incinerators should be utilized as water heaters (for baths and laundry) whenever practicable.

Burial of refuse. When cremation is impracticable, as will usually be the case on the march or during times of great activity at the front, all putrefactive wastes are disposed of by burial. Non-putrefactive material may be placed on an open dump, well to the windward of camp. Tin cans should first be burned, because of the organic matter clinging to them.

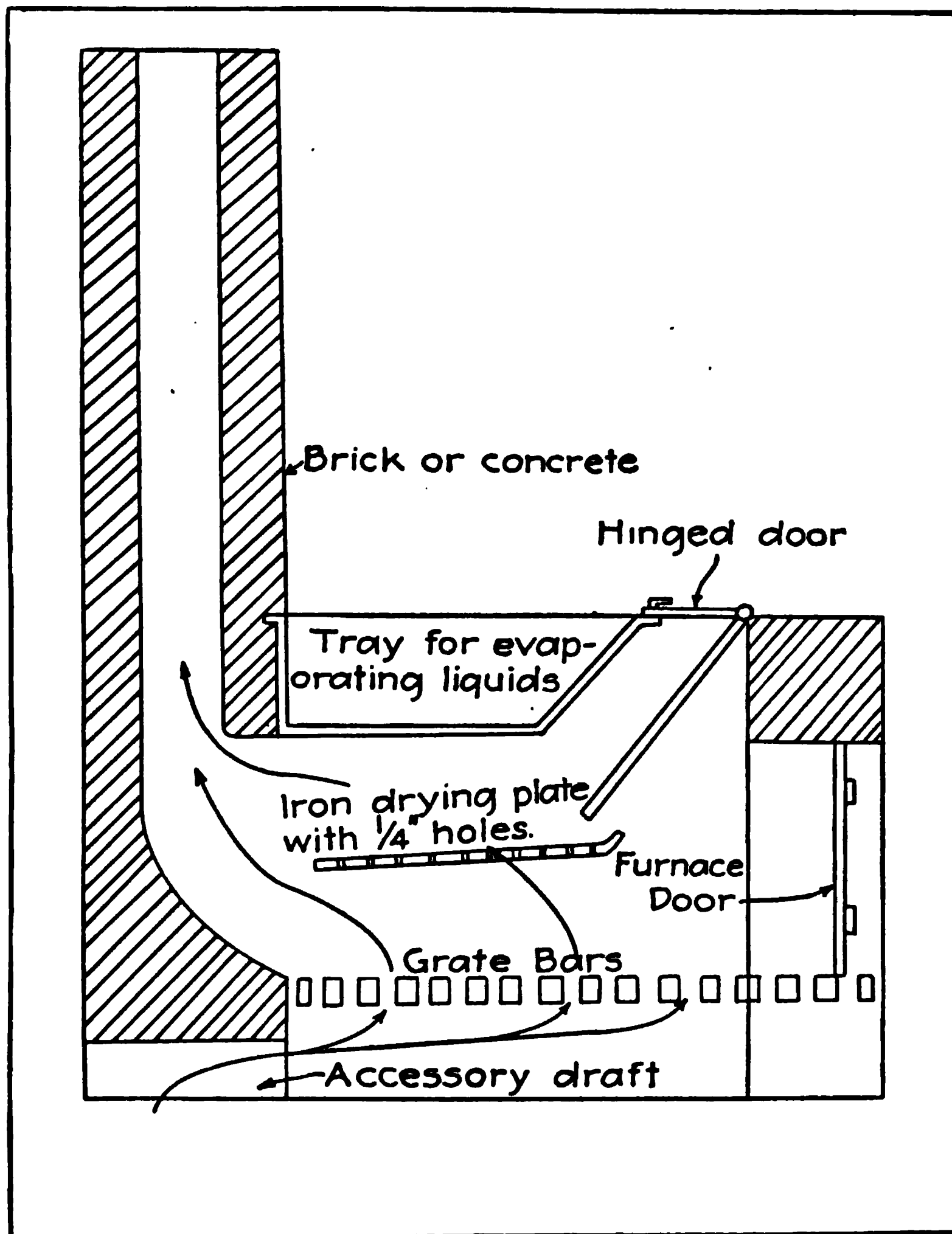


PLATE 257.—The McMunn Incinerator for Solid and Liquid Wastes.

Duties of Individuals.

The dangers of filth and of failure to properly dispose of all wastes have been plainly pointed out. It is the duty of the individual soldier to do his share to avoid

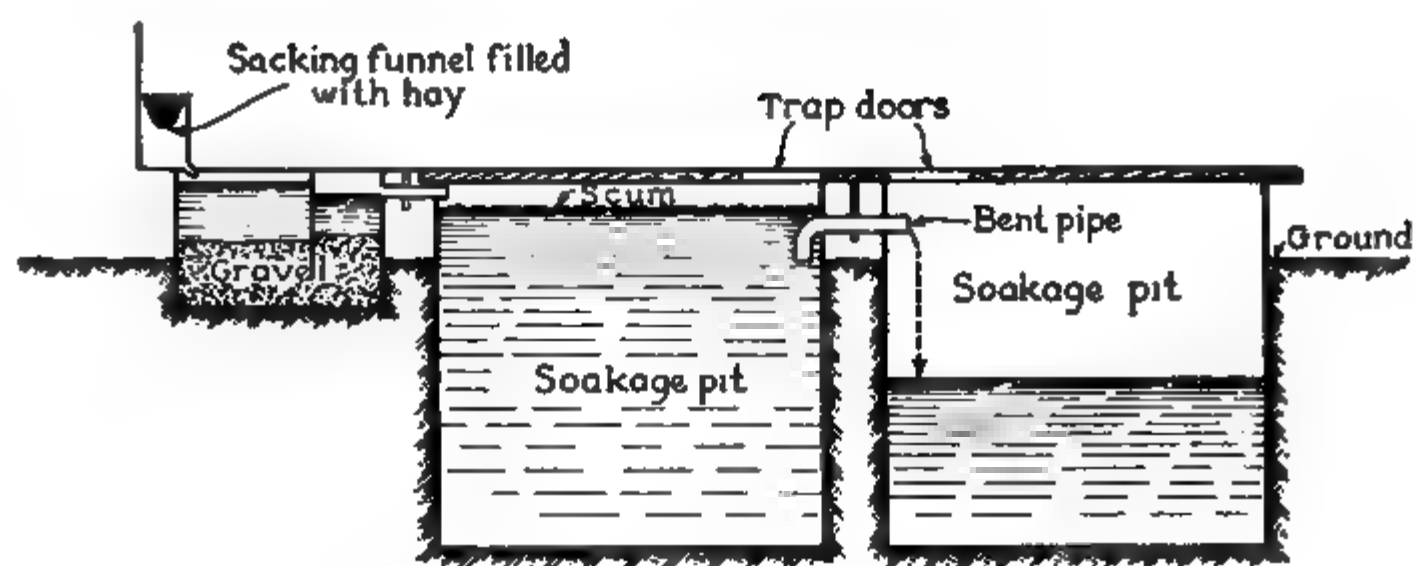


PLATE 258.—Soakage Pits and Grease Trap for Kitchen Water.

creating filth and to assist in disposing of it. These duties have been discussed under Personal Hygiene. They may be summarized as follows:

1. Never create any kind of filth. Use the latrine. Throw kitchen waste and miscellaneous trash into the receptacles provided for them, and replace the covers. Don't soil the latrine and don't spill garbage on the outside of the cans or the ground nearby.

2. Keep your own premises clean. Never hide waste in a corner or behind a door. Dispose of it properly.

3. If you see any waste anywhere clean it up if you can, or call somebody's attention to it. If you see a cluster of flies it is a sure sign of the presence of some kind of unsanitary waste, clean it up.

4. As your last duty in leaving a campsite see that so much of it as you are responsible for is clear of all waste. Burn what you can and bury the rest.

5. It is not degrading to remove filth which may breed disease. It is a high patriotic duty to do it.

FIRST AID.

Importance of First Aid.

To care for the wounded and restore them to health and usefulness is the business of the medical department. But a doctor is seldom present when a man is wounded or otherwise injured, and the wounded soldier himself, or his comrades, can do a great deal to help the doctor and to insure the wounded man's recovery. This requires a few very simple measures to be taken immediately (or as soon as possible) after the soldier is wounded.

One need not be a surgeon, or familiar with surgery, or medicine, to be very helpful. The things to be done are simple, and any man can learn them. But they must be done properly and promptly. These simple measures may save your own life, or the life of a comrade, so it is well worth while to learn them.

These things which are done by a wounded soldier or his comrades before the medical personnel take charge of him are known as "first aid." We will begin by describing first aid to a wounded man, because a wound is the most serious thing that can happen to a soldier, and we will then describe first aid in cases of drowning, and various other common accidents or injuries.

First aid in civilian life. It is well for you to remember too that it is not in war-time only, that intelligent "first aid" may save your own life or the life of some one you love. And then too any life is worth saving, even the life of a perfect stranger. Even if you have never seen him before he is a fellow-being, a brother, and it is your duty and your privilege to help him at the time when he most needs help. Now our statistics and our daily newspapers show that accidents and painful or dangerous injuries occur just about as frequently in time of peace as in time of war. Often the injured person is allowed to lie on the ground unaided until the ambulance arrives. This may be a half hour or more, and then it may be too late to save him. It is better to let him lie so than to try to help him if you do not know how, but if you can take the few simple precautions we are about to tell you, you may save his life or save him from being a cripple.

So first aid is not something that soldiers alone should know. It ought to be a part of the education of every citizen, because accidents occur at all times and places and under all circumstances. And to save a human life is the highest and finest service you can perform.

GENERAL RULES FOR FIRST AID.

The following rules are for general application in all cases of wounds or other injuries. Everybody should know these important rules by heart.

1. Act promptly but not hurriedly. Don't get excited or lose your head. Speak calmly and move deliberately.

2. Handle an injured person gently. Do not move him or change his position any more than absolutely necessary.

4. Place the patient in a comfortable position. Except in cases of drowning, or when necessary to get at a wound in the back part of the body, the best position is on the back, with the head down and the limbs straightened naturally. In case of wounds in the legs they may be raised slightly by placing a truss of straw or roll of clothing under the knees. This often eases pain and helps to stop bleeding.

5. In warm weather place the patient in the shade.

6. Keep the patient quiet. Do not let him get excited, move him as little as possible.

7. Do not allow people to crowd around the patient. This may interfere with his getting air, and always makes him nervous and excited if he is conscious. Keep everybody away except those who are assisting in first aid.

8. Examine the wound carefully, or make certain of the nature of the injury, before doing anything. Otherwise you are acting blindly.

9. Loosen any tight clothing that might interfere with free breathing or circulation of the blood, such as collars and neckties, belts and waistbands or breeches and drawers, leggings.

10. Open the clothing, cut or rip it, *so far as necessary to get at the wound*, but *no more*. Don't jerk at the clothing, and do not remove any more than necessary if the clothing is dry. Wet clothing will chill the patient and should be removed if it can be done without greatly disturbing him.

11. Do not touch the wound with your hands, do not allow clothing or anything else except a clean dressing from the first aid packet to come in contact with it.

12. Never attempt to wash a wound, or the skin around a wound with water or any kind of antiseptic. This is more apt to wash germs *into* the wound than to wash them *out*, unless it is done by a doctor.

13. It is always very important to keep the patient *warm*, and this precaution should never be neglected even in hot weather. To keep him warm is one of the principal means of keeping up his strength and vitality. The precautions to be taken to keep the patient warm are:

a. Remove only so much clothing as necessary to get at the wound.

b. Cover the patient with a blanket or overcoat, etc.

c. Keep him off the cold ground. Let him lie on a blanket, or a stretcher covered with a blanket.

d. Fill some canteens with hot water and place under the arm pits and between the legs. Do not let the canteens touch the skin, as painful burns may result.

e. Unless the patient is wounded in the abdomen or chest, give him a stimulating hot drink such as chocolate, coffee or even hot water.

f. In cold weather have the patient moved (preferably on a stretcher) to a warm place as soon as possible.

14. Do not administer any alcoholic stimulants (whiskey, brandy, wine) except where specially directed, or under the orders of a doctor. Very often such stimulants are helpful but more often they are quite otherwise.

15. Loss of blood is the principal thing to be feared. Excessive loss of blood means death. Therefore take the necessary steps, which are explained later, to stop the flow of blood.

16. A wound should be promptly covered with a clean, sterile dressing, to keep out dirt, flies, and other means of infection. This also helps to check the flow of blood.

17. Broken bones should be splinted, as explained later, to stop pain and prevent further injury.

18. During battle do not carry a wounded man to the rear. This is forbidden unless ordered by an officer. Put him in a safe and comfortable place nearby, on a stretcher if possible.

19. Bring the case to the attention of a doctor or a man of the medical corps, or one of your own officers, as soon as possible. In calling a doctor tell him what you

know about the injury so that he will know what equipment to bring. In civil life have some reliable person telephone promptly to a hospital or call a doctor.

20. Watch your patient carefully as long as he is under your care.

The foregoing precautions apply especially to wounds resulting from battle, industrial accidents, collisions, etc. Certain special injuries such as burns, sun-stroke, drowning, require additional special measures, which are explained a little later.

The important things to remember in the case of wounds are: Keep your patient quiet and undisturbed, keep him warm, cover his wounds with clean dressings, check excessive bleeding, splint fractured bones, turn him over to the medical authorities as soon as possible.

FIRST AID TO THE WOUNDED.

A wound in wartime is usually the result of battle, but wounds in peace often result from accidents. The following instructions apply to all wounds, whatever their cause.

Experience proves that a large proportion of death and disability is caused by early infection of wounds, and that the wounds of modern warfare are especially liable to infection. This infection results when the wounded are left with their wounds exposed and without surgical attention for too long a period. Accordingly the wounded should be given prompt attention. Their wounds should be covered (dressed) to exclude infection, and to check dangerous hemorrhage, splints applied to broken bones, the body comfortably disposed on a stretcher and blanketed to prevent chill, the patient given a drink if necessary, and started to the rear.

These preliminary precautions are collectively known as "first aid." If they are neglected or too long postponed, even a slight wound may result in serious disability or death, but if they are promptly attended to the patient will arrive at the hospital in good condition to undergo immediate operation, and may have an excellent chance of recovery even from a serious wound.

A doctor is seldom present when men are first wounded. All soldiers must learn to help themselves in such cases. If they are unable to do so alone they must be assisted by their comrades.

Elaborate measures are of course impracticable at the places where the wounded have fallen. They are given only such aid as will enable them to endure a short journey to the rear, to the aid stations established by the medical department. Here they receive, under the direction of a surgeon, such further treatment as will enable them to endure transportation to the hospital, and insure their arriving with enough remaining vitality to undergo prompt operation. Thus they are afforded the maximum opportunity for complete and early recovery.

Stopping Bleeding (Hemorrhage).

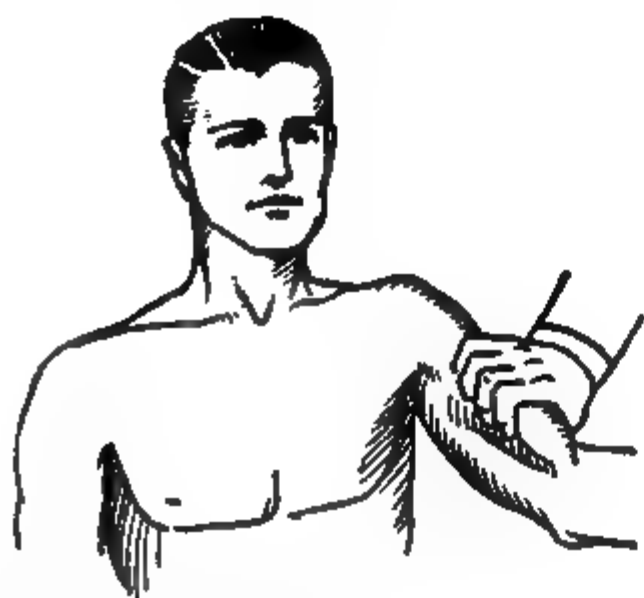
Our bodies are kept in repair and waste material is disposed of by the blood. It goes to every part of the body, distributing the new building material that is needed, and gathering up the waste products, which it burns up in our lungs or otherwise disposes of.

The blood is distributed through pipes called arteries, and returns to the heart through other pipes called veins. These pipes of course are large close to the heart, and become quite small as they reach our extremities. The heart is nothing more than a pump which causes the blood to circulate.

Every time that we are wounded, however slightly, some of the arteries and veins are cut and blood escapes. If a large artery is cut a considerable amount of blood may escape, often it comes out in jets or spurts as the heart beats.

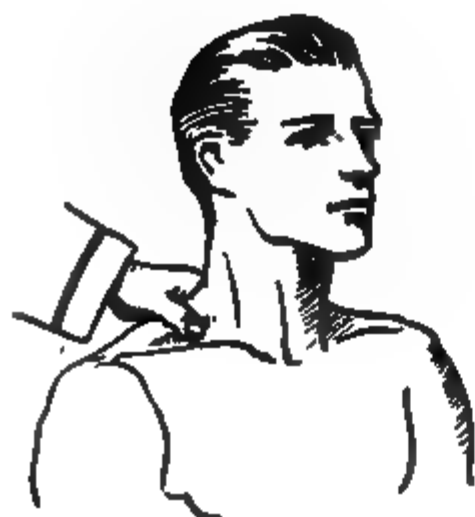
We have only so much blood as we need. We cannot afford to lose any. If we lose very much it means death. Accordingly loss of blood is the thing most to be feared when a man is first wounded, and we must take the necessary measures to check or greatly reduce this loss. Let us see how this is done.

First of all, the arteries have the remarkable power of healing their own wounds. The blood on escaping into the air coagulates or hardens, and forms a clot which tries to close the wound and prevent further loss. But sometimes nature requires artificial assistance in curing our wounds.



Wound in arm

Wound in leg



Wound in shoulder

Tourniquet

PLATE 259.—Checking Hemorrhage.

If we have a small leak in a garden hose it can be checked by putting a pad over the hole and wrapping it with a bandage. If a water pipe in the house bursts we shut off the water until the break can be repaired. We proceed in a very similar way to stop blood-leaks.

A compress placed on the wound and bound with a spiral bandage will check bleeding and give a chance for a blood clot to form. It will usually be sufficient in cases of slight or moderate wounds.

But if a large artery is cut it will be necessary to shut off the flow until a clot can form. Of course the closure must be made *between* the heart and the wound, as the blood in the arteries flows outward from the heart.

If the wound be in the knee, for example, find the large artery leading down into the leg, and close or partly close it by compressing between the fingers and the bone in the leg. Feel down until you find the right place, and watch the effect on the flow of blood. This is what the doctors call "digital" (finger) compression. The proper places to apply this pressure for wounds in various parts of the body are shown in Plate 10. The compression may be kept up for 10 or 15 minutes. Then take a short rest or have another man help you.

These three remedial measures, that is the blood clot of nature, a dressing over the wound, and compression of the large artery, will usually be sufficient to prevent excessive loss of blood except when a large artery has been cut. If they are not sufficient we use a tourniquet.

The tourniquet. A tourniquet operates in the same manner as compression with the fingers, and is applied at the same place. It is illustrated in Plate 10. The pad may be a tight wad of cloth, or some hard object such as a block of wood or a smooth stone wrapped in soft material. The bandage may be a handkerchief, necktie, etc. The tourniquet is tightened by twisting the bandage with a stick.

The tourniquet is a most useful device whose prompt use has saved countless lives. But in unskilled hands it is a dangerous device, and the following precautions should be carefully observed in using it.

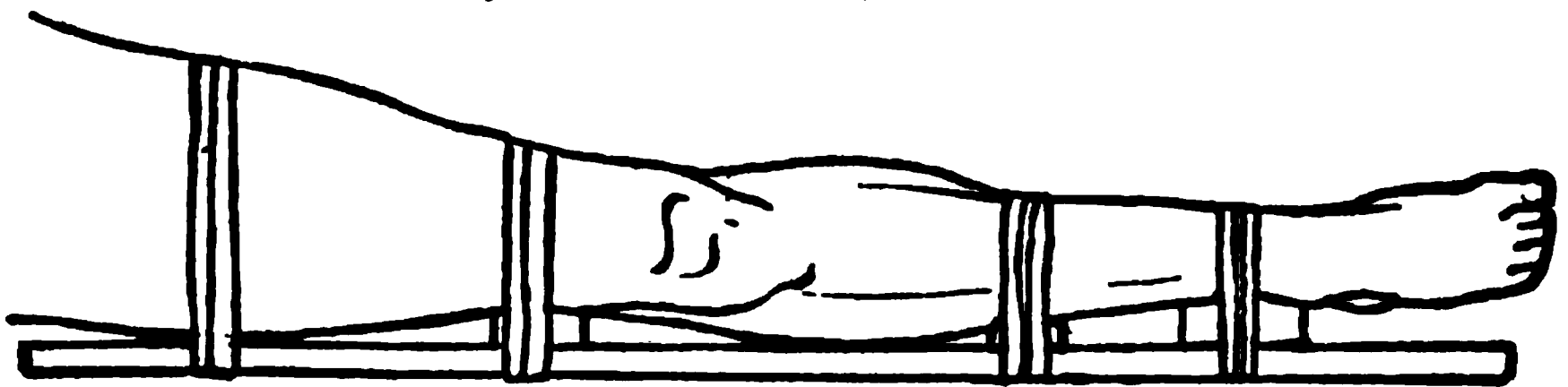


PLATE 260.—Principle of the Splint.

a. Do not make the tourniquet any tighter than necessary to check the bleeding. At best it is painful.

b. Loosen the tourniquet not oftener than once every half hour nor less often than once an hour. Notice whether bleeding starts again. If it does, tighten up the tourniquet.

c. A tourniquet should never be hidden by clothing or a bandage so that it might be overlooked or forgotten.

d. Mark the patient's tag plainly: "tourniquet." If he is conscious caution him to tell everybody that he has a tourniquet.

e. If a tourniquet is left on for as much as 6 hours the patient will lose his limb.

f. Remove the tourniquet as soon as it becomes unnecessary to check hemorrhage.

Splinting of Fractured Bones.

A broken bone is known as a fracture—a very common injury in modern war or industrial accidents. Naturally fractures occur most frequently in the limbs, especially the legs.

The immediate danger in the case of a fracture is that the sharp, jagged edges of the broken bone, in moving about, will lacerate the arteries, veins and muscles. Moreover the movement of broken ends causes intense pain. Accordingly a man with a broken bone should not be moved until the fracture has been so treated that the broken ends cannot move about. This is accomplished by what is known as splinting. A splint is simply a piece of stiff material such as a piece of board or the limb of a tree, to which a broken bone is bandaged, to prevent its movement. The principle is indicated in Plate 260. The splint is to be well padded, where it touches the limb. Pads should not be placed on the fracture, but above and below.

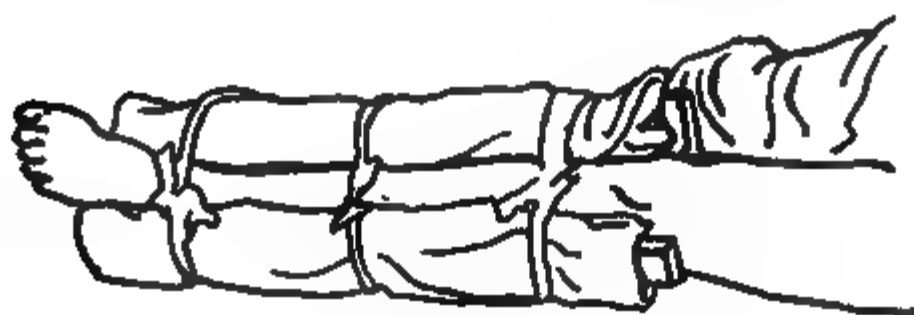
In splinting, the limb should first be straightened out naturally, and the broken bone aligned by a gentle pull in the direction of the length of the limb (called "traction"). The splint is then placed, padded and bandaged at enough points to insure that there will be no movement of the broken bone. This means that the splint must be long enough and stiff enough. A very short and weak splint will generally be useless. The bandages must not be so tight as to prevent circulation of the blood.

1. Extemporized Splint and Sling Support for Fractured Arm.

2. Extemporized Splint, Supporting Sling and Fixation Bandage for Fractured Forearm.



3. Body Splint for Fractured Pelvis.



4. Blanket Roll as Splint for Fractured Leg.

PLATE 261.—Improvised Splints.

Time should not be wasted trying to diagnose fractures in the field. If there is any doubt as to whether a bone is broken it should be splinted. The Medical Department has a number of standardized, very light and portable splints for fractures of various kinds. These splints should always be available, at the front, and should be applied by medical personnel. They are far more effective than improvised splints, as they exert a continuous pull or "traction" upon the broken bone, keeping it in proper position and alignment, and effectively provide for "fixation" (prevention of movement of the broken bone) without undue constriction of the limb. The important thing is to prevent laceration and pain, which result from movements of the broken parts. Accordingly, even if the limb is not properly extended nor the broken parts in correct relative positions, much has been accomplished if relative movement of the broken ends is prevented, and better splinting

can be done at the aid station. Of course, if the patient has been properly dressed and splinted where he fell, he need not again be subjected to this operation, at least until he reaches the hospital. Accordingly, this should always be done if possible and preferably by medical personnel.

Improvised splints may be made of almost any material. The following instructions, which are illustrated in the accompanying figures (Plate 261), cover some of the more important cases of improvised splinting.

1. *Fracture of the upper arm.* Apply two splints; one in front, the other behind, if the lower part of the bone is broken; or to the inner and outer sides if the fracture is in the middle or upper part. Support by a sling.

2. *Fracture of the forearm.* Place the forearm across the breast, thumb up, and apply a splint to the outside extending to the wrist and to the inside extending to the ends of the fingers. Support by a sling.

3. *Fracture of the thigh.* Apply a long splint, reaching from the armpit to beyond the foot on the outside, and a short splint on the inside.

4. *Fracture of the lower leg.* Apply two splints, one on the inside and one on the outside.

The shirt sleeve may be used as a sling for the arm, see Plate 262.

A blanket roll and two sticks will serve as a splint for a fractured thigh or leg when nothing else is available (Plate 261).

In the absence of any splinting material a broken arm may be bandaged to the body, or a broken leg to a good leg.

A number of the standard splints of the Medical Department are shown in Plate 263.

The First Aid Packet.

PLATE 262.—Shirt Sleeve or Flap as a Sling.

Much of the first aid equipment of the soldier must be improvised of any materials at hand. But each soldier is provided with a "first aid packet," and it would be well if every civilian were also equipped with one of these packets.

The first aid packet of the army is a little air-tight metal case, dimensions about $4 \times 2\frac{1}{2} \times 1$ inches. It is carried in a small web pouch, attached to the belt of the soldier. It is easily opened at the instant it is to be used, by tearing apart the metal case.

The packet contains a number of compresses of absorbent gauze and some rolled bandages, the compresses being usually attached (sewed) to the bandages. (Plate 264.) There are also some safety pins. All of these are carefully sterilized and wrapped in waxed paper.

To apply one of these dressings to a wound the wax paper is removed without touching the gauze compress. The bandage rolls are then grasped in the two hands, and the compress applied, after which the bandage is wrapped snugly but not tightly around the compress, and its ends secured by tying them together or by safety pins. Extreme care should be exercised that nothing touches the inner surface of the compress before it is placed on the wound (Plate 264).

If the wound be a large one the compress may be opened by cutting the threads which hold it folded, thus doubling its size, or the dressings from several packets may be used.

The rolled bandages may also be used for slings or tourniquets, or as wrappings for splints (Plate 261).

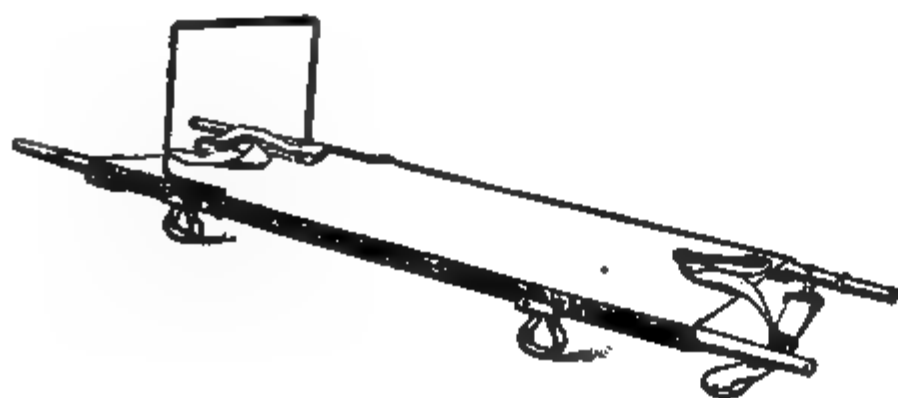
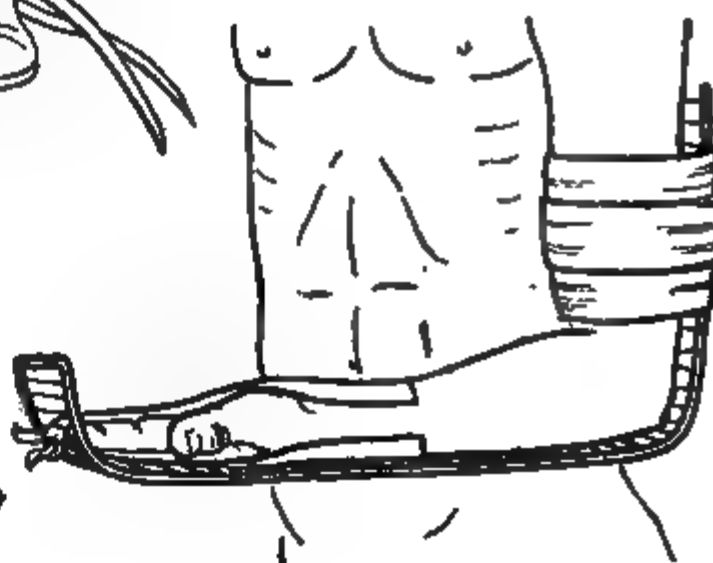
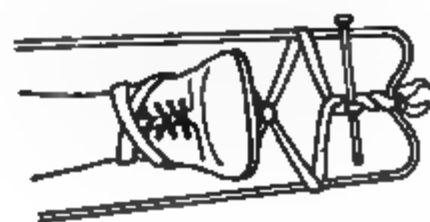
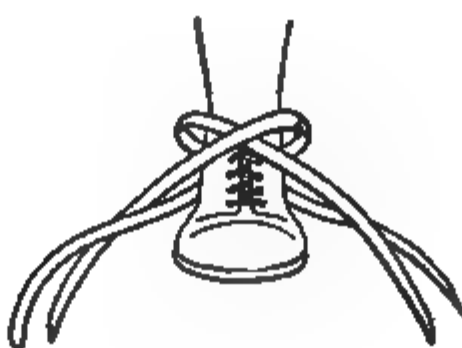
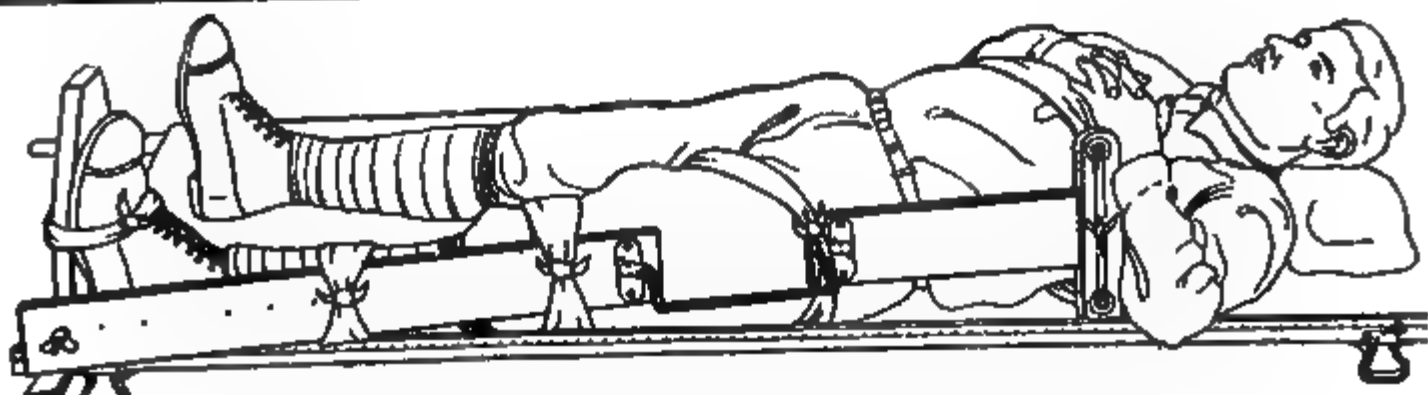


PLATE 263.—Standard Splints and Appliances. Service Litter.

A head dressing requires more care than one upon a limb. The bandages are kept from slipping by passing turns under the chin, behind the ears, over the crown, and by the use of safety pins.

A dressing properly applied will often be sufficient to check hemorrhage (bleeding.) If it does not, digital compression and the tourniquet are used. A wound,

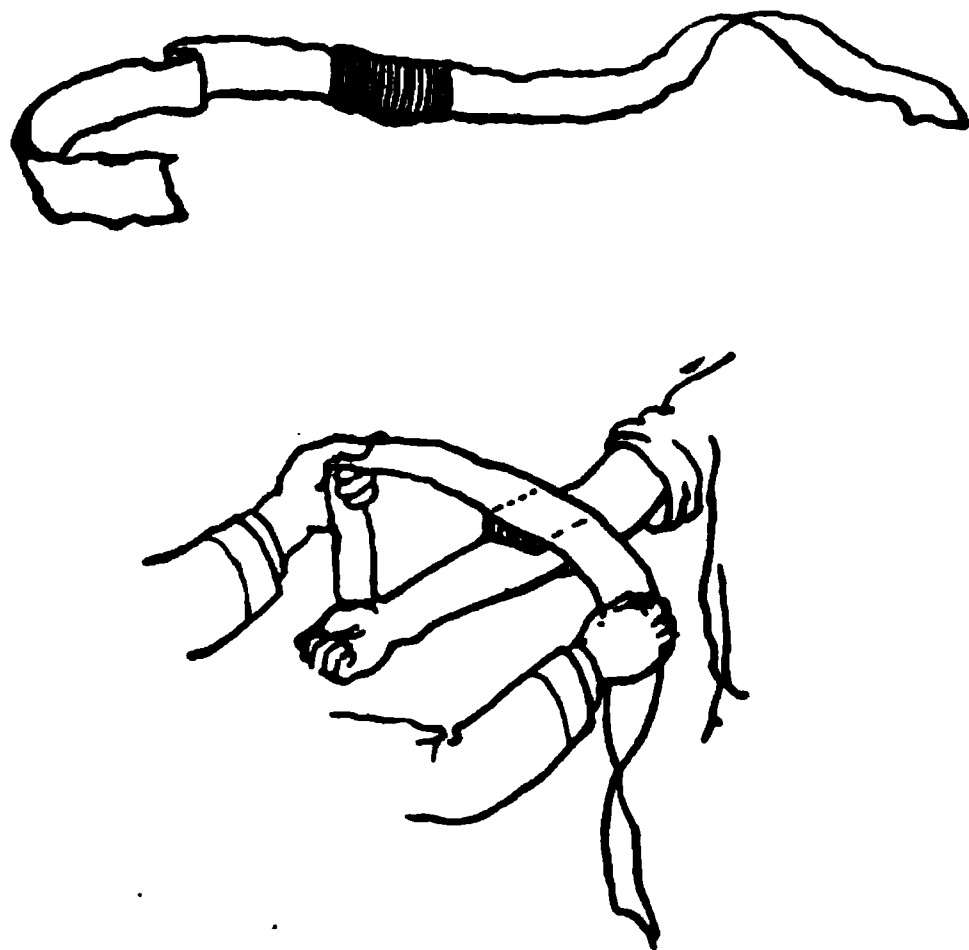


PLATE 264.—First Aid Dressing, Compress and Bandage.

even a slight wound, should always be dressed in order to protect it from infection, or further infection by flies or dirt. The sterile dressings furnished by the government, and contained in the first aid packet should always be available and always used. Do not dress a wound with unsterilized material.

Anti-Shock Treatment.

Shock is a condition of extreme depression or lowering of vitality, usually the result of a severe wound. But in nervous or feeble persons it may result from a very slight injury. It is a condition not easily mistaken. Its principal symptoms are a temperature below normal, a weak and irregular pulse, pallor of the skin, a cold sweat especially on the forehead, nausea or vomiting, and a sighing and irregular breathing. The patient feels weak and may become unconscious. If conscious he wears a frightened and anxious expression.

Shock may follow very shortly after the wound, or it may be deferred for one or two hours. It is always aggravated by cold or wet, lack of food or water, bleeding, pain and lack of rest and sleep.

If the symptoms are mild the patient should simply be kept quiet and warm until he recovers. In severe cases, however, active measures are required or death will frequently follow. Any person who has received a severe injury should be promptly given anti-shock treatment, even if the symptoms have not yet made their appearance. Shock is very apt to follow a severe wound, and it should be forestalled even if it does not immediately appear.

The following are the principal first aid measures to be taken to forestall or combat shock. Some of these have already been described.

a. Place the patient in a comfortable position, usually on his back, his limbs straightened and his head slightly raised.

b. Apply dressings to the wounds.

c. Check dangerous hemorrhage (bleeding).

d. Apply splints to fractured bones.

e. Loosen all tight clothing.

f. Keep the patient *dry* and *warm*, with blankets or clothing and hot water bottles or canteens filled with hot water. Be careful not to burn the skin; the patient will often be too depressed to notice whether he is being burned. If practicable move him to a warm room. If he is on a litter a stove may be placed under it. Unless the wound be in the chest or abdomen, hot nourishing drinks (cocoa or broth) may be given.

g. Allay pain by a dose of morphia, thus facilitating rest and sleep. Morphia should be given only by a doctor or responsible man of the medical corps.

h. Keep the patient perfectly quiet. Shelter him, move him as little as possible, let him rest and sleep. Even when the ambulance is ready to take them to the rear it is better not to disturb patients in deep shock until they show signs of recovery. A ride in an ambulance is bad for them at this time.

These measures should be carried out as promptly as facilities permit.

Tetanus or lock-jaw. The germs of tetanus are found in many soils and frequently upon objects that have touched the soil. They are extremely apt to get into the wounds received in battle and the probability of this is so great that it is now the custom to give an injection of anti-tetanic serum to all wounded men, whatever the nature of their injuries. This treatment, of course, cannot be classed as first aid, as it cannot be given by the comrades of the wounded man. It is sufficiently important to be worth mentioning at this point.

Moving the Wounded.

Wounded should be carried in the service litter (Plate 263) whenever possible, and it is usually best to let them lie until a litter is available.

PLATE 265.—Carrying Seriously Wounded in Recumbent Position.

If there be no service litter at hand a litter may be improvised out of poles supporting a blanket, bags, shelter tents, bedtick, poncho, chicken wire covered with clothing, and many other similar articles. It is best to form a framework by lashing two short poles across the ends of the large ones to keep them apart. Poles should be at least 7 feet long. An ordinary camp (gold medal) cot makes a satisfactory litter. A patient having once been placed upon a litter should not thereafter be removed from it until he reaches the hospital.

It will occasionally be necessary to move wounded short distances without the aid of a litter.

1. One Bearer Supporting Patient.

2. Carrying Patient in Arms.

3. Carrying Patient Across Shoulder.

4. Carrying Patient Straddle-back.

5. Carrying Patient by Extremities by Two Bearers.

PLATE 266.—Carrying Wounded.

A seriously wounded man, especially one with a broken leg, should be carried in a recumbent posture by two men, one supporting the upper part of the body and the other the legs. The patient being on his back the bearers, both on the same side, slip their arms under his body and raise him gently. There is no objection to allowing the patient's head to hang down for a short time. Plate 265. Plate 266(5) indicates another method for two bearers to carry a patient. It is not suitable in cases of severe injuries to arms or legs.

Patients not seriously wounded may be assisted in walking or carried by one man, as indicated in Plate 266. If the patient is unable to rise to an erect posture he should be gently assisted to his feet by two men. If the bearer has no assistant he proceeds as follows: (Plate 266.)

1. Turn the patient on his face, step astride his body facing his head, place hands under his armpits and raise him to his knees. Clasp the hands over his abdomen and raise him to his feet. With the left hand seize the patient's left wrist and draw it around bearer's neck holding it against the chest. Allow patient's left side to rest against the bearer's body and support him with the right arm about his waist.

2. Proceed as in last case. Pass the left arm behind the patient's legs and raise him to the position shown.

3. Raise the patient to his feet as previously described. Seize his right wrist with the left hand and draw his arm across the (bearer's) left shoulder. Now stoop, pass the right arm behind the patient's right thigh and seize his right wrist with the right hand. Draw the patient's left arm around the bearer's back and steady it against the left side with the left hand. Now rise slowly to the position shown in the figure.

4. Raise the patient to an erect position, step in front, back to the patient, stoop and grasp his thighs, and rise to the position shown, bringing the patient well upon the back.

The methods shown in 1 and 4 (Plate 266) can evidently not be used with an unconscious man, as the patient must help himself.

If the location of the patient's wound requires it, the methods shown in 1, 2, 3 and 4 (Plate 266) may be reversed from right to left.

In lowering the patient to the ground the motions described are reversed.

Wounded men must be handled with extreme care and slowly. Especially in lowering them to the ground be certain that they are not subjected to any shock or jar.

Typical Experience of a Wounded Man.

A conception of the processes of battlefield aid to the wounded may be gained by following the progress of a wounded man to the rear.

Private Jones, while acting as scout in front of an assault (1st line) platoon, has his leg broken by a bullet or shell splinter. He rolls upon his back, where he can look forward, and lies perfectly still for a few minutes. No further fire being directed at him, although his position is very exposed he presently crawls behind a small hummock nearby, where he is concealed from view.

Here Pvt Jones attempts to apply a dressing from his first-aid packet, while keeping under cover. This he is unable to do. The platoon comes forward, and a comrade assists him in applying the dressing and, if necessary, applies a tourniquet. Pvt Jones is unable to walk unassisted and his comrade is not permitted to leave the attacking line to help him to the rear.

About 20 minutes later, when Pvt Jones' platoon has advanced a half-mile or so, an enlisted man of the medical corps, who is following up the advance, finds him.

He examines the wound, loosens the tourniquet and gives Jones a stimulant. Shells are still falling. The medical corps man tells Jones to lie still, that he will be picked up soon.

In about 15 minutes the shelling falls off greatly. Two men of the medical corps arrive with a hand litter. They examine Pvt Jones, and finding he has a broken leg they apply an improvised splint. They then place him on the litter and start to the rear. Progress is very slow, as a sheltered route must be followed. Twenty minutes or more is required to reach the battalion aid station, about half a mile to the rear. Part of the journey is performed on a wheeled litter carrier.

At the aid station Pvt Jones remains upon his litter. He is given an injection of morphia to allay his pain, and anti-tetanus serum. The improvised splint is replaced by a standard splint, and the dressing readjusted if necessary. He is given a hot drink and blankets are placed over him. He is placed under shelter and allowed to rest in quiet. A tag, indicating the nature of his wound and the treatment given him is attached.

Pvt Jones litter is now placed on a wheeled carrier, or perhaps in a light ambulance and he proceeds a mile more or less to the rear, arriving at ambulance head in 15 or 20 minutes. Here he is examined to see how well he is enduring the trip. His litter is then placed on a standard ambulance and he continues some miles to the rear, arriving at the sorting station or triage. Here he is again examined (without being disturbed), classified as "seriously wounded" and sent to a mobile hospital for operation, still on the same litter.

Pvt Jones arrives at the operating hospital between two and three hours from the time he received his wound. Here he is prepared for operation, and placed on the table as soon as he is ready to undergo the operation.

First Aid in Various Cases of Accident and Injury.

The following cases of injury, other than wounds received in battle, occur even more frequently in civil life than in the army, and accordingly every person should know the signs or symptoms and the simple measures of first aid to be used in each case. This knowledge may enable you to save a valuable life, or at least to save much suffering.

In all serious cases a competent doctor should be called promptly. The following measures are those which should be taken while awaiting the doctor's arrival.

Everybody wishes to aid those who have been injured yet few know what to do. The measures to be taken are all very simple and usually very effective. It is your duty to know them. Know what you are doing, for if you do the wrong thing you will harm the injured person instead of helping him. If you don't know what to do it is best to do nothing. But there is no excuse for this.

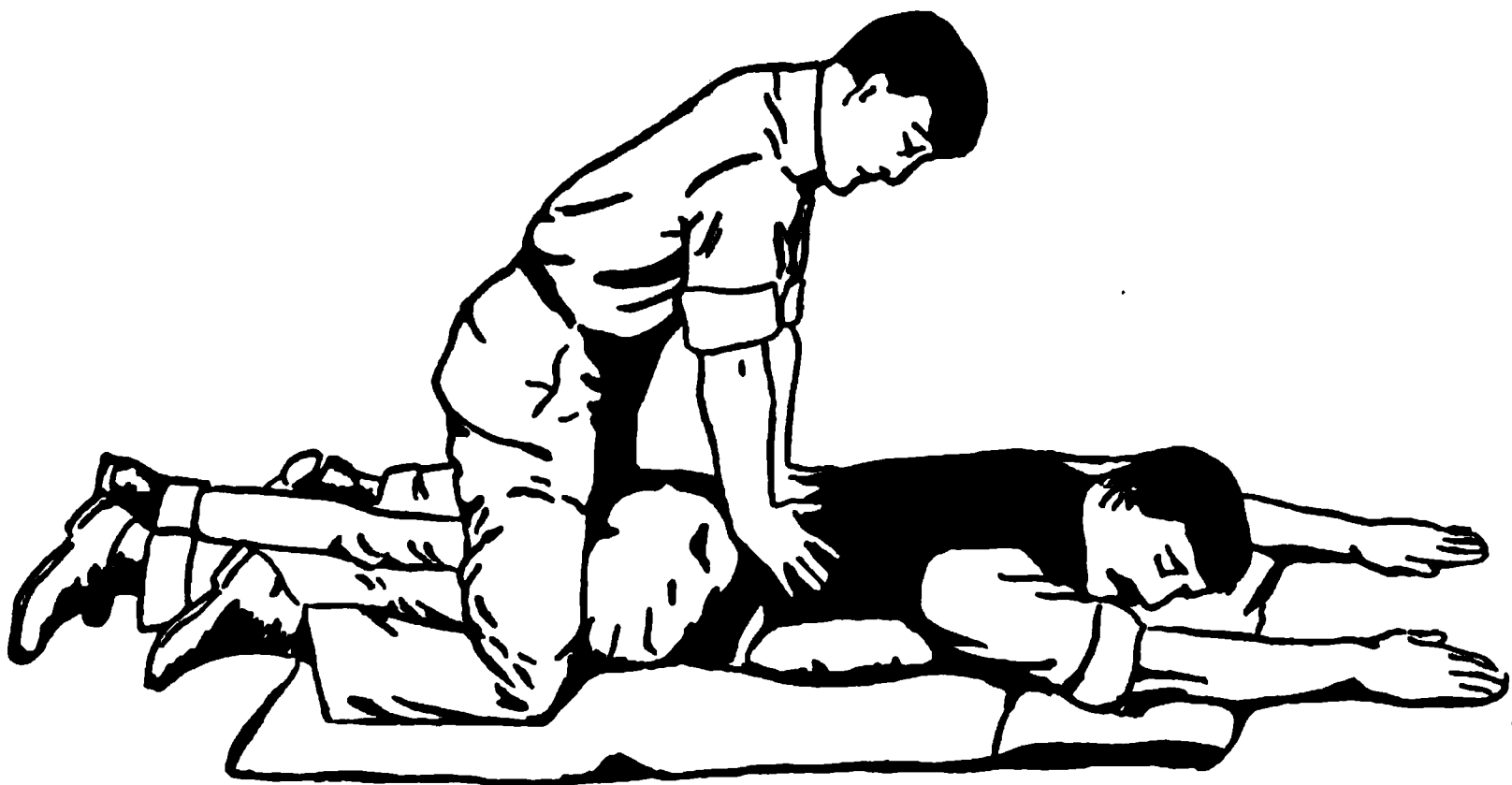
Drowning. A person who has been drowned stops breathing, and to resuscitate him it is necessary to start him breathing by artificial means. (Plate 267.)

It should never be assumed that the man is drowned (that is *dead*) unless he is known to have been under water for a very long time. Start artificial respiration at once, on the ground or in a boat—do not wait to remove clothing or carry the patient to a more convenient spot.

As soon as the patient is out of the water turn him face downward, clasp him under the waist, and raise the body so water will drain out of the air passages. Then extend his arms forward, turn his head to one side so his mouth will be clear of the ground. Straddle him in a kneeling position, and locate his lowest ribs. If necessary raise his shirt to expose his back and feel around to the front for the ribs.

Now place the heels of the hands on the outer parts of the lower ribs and bring a heavy vertical pressure to bear by throwing your own shoulders and body forward, and rising on your toes if you are of light weight and the patient heavy. This pressure should be applied with increasing intensity for about three seconds, and

then suddenly released, keeping your hands in the proper place, however. After two seconds of release apply the pressure again. The whole procedure thus requires five seconds, which is about the normal rate of breathing. Continue the operation at a uniform rate until the patient begins to breathe himself, and then watch carefully to see that he does not stop again. Continue to assist him, and do



Expiration



Inspiration

PLATE 267.—The Schaefer Method of Artificial Respiration.

not permit him to change his position until his breathing is full and regular. Cases of recovery after two hours of this treatment are on record. So continue for that period if necessary. Do not give any stimulants or liquids until the patient is conscious. Then give stimulants and keep him warm.

This method of artificial respiration may also be used in cases of cessation of breathing following an electric shock, gas asphyxiation or concussion of the brain.

A feather or mirror held in front of the patient's nose will indicate whether the artificial respiration is actually being produced, and also will show when he begins to breathe naturally.

Precautions. Most drownings occur when people go swimming, so that the following simple ten commandments for such people are not out of place:

1. Don't go in swimming alone unless you are an expert.
2. Don't swim immediately after eating; wait at least two hours.
3. Don't swim if overheated.
4. Don't swim if you have heart trouble.
5. Don't continue swimming when exhausted.
6. Don't wade into water with your arms above your head. You will not be in readiness to stroke should you step into a hole.
7. Don't struggle if caught in a swift current or undertow. The force of the current will bring you to the surface.
8. Don't fight or struggle if you swallow water; clear your windpipe of water first.
9. Don't cry for help in fun; you may need help some time and not get it.
10. Don't dive without knowing how deep the water is.

Fainting or loss of consciousness. Except as a symptom of severe shock this condition is seldom dangerous. The patient continues to breathe.

Lay the patient on his back, head on a level with the body, arms and legs straight. Loosen tight clothes, especially around the neck. Give him plenty of air. Keep him quiet.

Chafe the patient's arms and legs, rubbing from the hands or feet towards the body, and slap the chest. Sprinkle cold water on face and chest. Give stimulants carefully and slowly (whiskey, hot coffee, etc.).

Sunstroke and heat exhaustion. These result when persons are exposed to high temperature, either of the sun or from other cause. The patient may or may not be unconscious. His face is flushed, his skin hot and dry, his breathing labored and pulse rapid and strong.

Move the patient to a cool, shady spot, loosen the clothing, and cool the head and body by applying cold towels or ice bags. Do not give any stimulants.

In rare cases sunstroke may go into collapse, in which the skin becomes cold and the pulse weak. In such a case alcoholic stimulants should be given and the body warmed by blanketing, hot applications, and chafing the limbs.

A sunstroke is often preceded by headache, dizziness, nausea and a feeling of being oppressed by heat. If at this time the patient will get into the shade, take off his coat and lie quietly, a sunstroke may often be avoided.

Suffocation (asphyxiation) from gas. The patient requires fresh air, warmth, quiet and rest. If he is unconscious treat as in cases of shock. If he has ceased breathing apply artificial respiration as in drowning.

In case of gas poisoning from the gases used in war, get the patient out of the gassed area into open high ground.

Remove his equipment, including his gas mask as soon as out of the gassed area. If necessary remove gas-impregnated clothing.

Treat the eyes, skin, mouth, throat and stomach (inside) with a mild alkaline solution (soda, or lime water).

Keep the patient *quiet and warm*.

Keep gas patients away from those who are not gassed. Have their clothing and equipment aired and boiled or steamed.

In handling gassed cases it is well to keep on your own mask and to wear gloves if you have them. If not wash your hands or rub dry lime on them.

When a man has been "gassed" exertion is very dangerous, even if he feels fully equal to it.

Choking. A person who is being suffocated by a substance lodged in his windpipe (usually food), gasps for air and clutches at his throat. He may cough violently, his face often turns blue, his eyes start out of their sockets. This condition may result fatally if the foreign body is large enough to entirely cut off the supply of air, and is not promptly removed.

Have some one send promptly for a physician, and tell him the circumstances so that he may bring the proper instruments.

Cause the patient to cough and slap him violently on the back between the shoulder blades. If this is not sufficient hold him by the feet or legs, head down, and again slap him on the back.

Burns or scalds. Remove the clothing very gently from the burned portion. Do not open blisters. Cover the burned area with a lotion of equal parts of linseed, cottonseed or olive oil and lime water, or oil alone if no lime water is available.

If a person's clothing is on fire, choke the flames by wrapping him in a blanket, comforter, table cloth or the like, or use your own coat. Do not let him run, throw him to the floor or ground and smother the flames.

If you are caught in or have to enter a house which is full of smoke, cover your nose and mouth with a wet handkerchief. Also remember that there is no smoke within 6 inches of the floor, so when you can no longer breathe in an upright position get down and crawl with your mouth close to the floor.

Electric shocks and burns. These result from contact with wires carrying a heavy (high tension) current.

Electric shock exhibits symptoms similar to those of wound shock and is treated in the same way. If breathing has stopped apply artificial respiration as in drowning. Electric burns are treated in the same manner as other burns.

The most important thing for you to do is to first remove the person from contact with the wire or electrical machinery. You must remember that this is always a dangerous procedure and should never be attempted unless you have some means of insulating yourself; otherwise you may receive fully as severe a shock as the person whom you are attempting to rescue, and which might result in your death. The hands should be thoroughly protected by some insulating material or nonconductor of electricity such as rubber gloves, rubber blanket, mackintosh coat, several thicknesses of silk or dry clothing. The rescuing party should be further insulated by standing on a rubber mat or dry boards.

Freezing or frost-bite. The part frozen, which looks white or bluish white, and is cold, should be very slowly raised in temperature by careful rubbing with snow or ice and water in a cool place and never near a fire. Stimulants are to be given cautiously, when the patient can swallow, and followed by small amounts of warm liquid nourishment. The object is to restore the circulation of the blood and the natural warmth gradually and not violently. Care and patience are necessary to do this.

Snake-bite. Snake venom is very rapidly absorbed into the system. If the bite be on a limb, place a tourniquet close to the wound on the side towards the heart. With a knife make two cross cuts through the wound so that it will bleed freely. Suck the wound strongly and spit out the blood and poison. If there are cracks or sores on your lips or sores or cuts in your mouth some of the poison may enter your own system. Finally cauterize (burn) the wound with a match, hot knife blade or nitric acid. If the heart action becomes weak, alcoholic stimulant should be freely used.

Bite of a mad dog. The treatment in this case is the same as for snake-bite, except that as the poison is not rapidly absorbed into the blood no tourniquet is needed.

Bites of scorpions, spiders, wasps, etc. These are treated by local applications of a solution of baking soda and ammonia with stimulants if necessary. They are often painful, but not dangerous.

Poisoning. This results from swallowing mineral or vegetable poisons or eating spoiled food (ptomaine poisoning).

The remedy is an antidote for the poison or an emetic to produce vomiting.

There is an antidote for each poison, and if there be a drug store near the druggist will know and can furnish it promptly. In general alkalines are antidotes for acid poisoning and the converse.

If you do not know or cannot promptly obtain the antidote an emetic should be used. There are certain drugs which are powerful emetics, and it is well to keep them on hand. Mustard or salt in warm water have an emetic action. Vomiting is also induced by sticking the fingers down the throat. As some of the poison may have entered the bowels it is well to follow the emetic with a cathartic, Epsom or Rochelle salts, castor oil, etc.

An emetic is advisable in any case of poisoning except where the poison has evidently burned the lips and mouth (acid). In this case give the patient a large dose of olive, cottonseed or castor oil (internally), followed by the proper antidote.

When the poison has been evacuated the patient should be kept warm and given stimulants.

It is well not to keep in the house any unlabeled poisons which could possibly be taken internally by being mistaken for medicine.

Epileptic fits. These are due to disease of the brain and come without warning, at home or on the street. The patient at once becomes unconscious and goes into violent convulsions for 5 or 10 minutes. Nothing can be done to stop the convulsion. Place the patient on a mattress or some soft surface, and prevent his injuring his head or limbs by striking them against any hard object. If possible place a handkerchief between his teeth to prevent him from biting his tongue. Do not attempt to hold him down. Following the convulsion the patient usually sleeps several hours.

Apoplexy. This is unconsciousness resulting from the bursting of a blood vessel in the brain, sometimes accompanied by convulsions. It seldom occurs in persons under 50 years of age.

The treatment is the same as in cases of shock, but no stimulants should be given. A physician should be called at once.

Concussion of the brain. This results from a severe blow on the head, not sufficient to fracture the skull. The patient is pale and weak, always dazed and sometimes unconscious.

The treatment is similar to that for shock. The body and limbs should be kept warm, and the head cool, by cold towels or ice bag. No stimulants should be used.

The patient should be examined by a doctor to make certain that his skull is not fractured.

Compression of the brain. This is unconsciousness resulting from pressure on the brain by a piece of broken bone or by a ruptured blood vessel, either resulting from a heavy blow on the head.

The condition is similar to apoplexy and is often fatal. Little can be done before the arrival of the doctor. Lay the patient on his back with head slightly raised, in a dark quiet room. Loosen clothing and keep the head cool. Give no stimulants.

Cuts. A cut is a small wound. Allow it to bleed freely for a time, wash with an antiseptic solution, such as listerine, and brush with tincture of iodine. If the cut is a deep or large one place a sterile dressing on it and soak the compress with an antiseptic, bichloride of mercury is best. Very bad cuts should be dressed by a doctor.

Bruises. Sprains. If the bruise is serious apply hot towels to the injured portion. Paint with tincture of iodine and bandage if necessary to protect the surface.

In case of sprain place the sprained limb in water as hot as the patient can stand and increase the temperature gradually, to the limit of his endurance. Rub with liniment. Do not use the sprained limb. Repeat the treatment several times daily if necessary.

Dislocations. A dislocation is a bone out of place at the joint where two bones come together. The patient is unable to move his limb (jaw, etc.) in the usual manner, and the joint appears deformed as compared with the corresponding joint on the other side of the body.

Pull the limb strongly and steadily away from the body. If this does not correct the trouble it is probably a fracture. Dislocation is often accompanied by sprain.

Foreign bodies in eye, ear, nose or throat. If a foreign body (insect, cinder,

etc.) lodges in the eye, close the eye and allow tears to accumulate. Then open the eye and the tears will often wash the foreign body into the corner of the eye where it may be removed. Other expedients are: Take the upper lid by the lashes, pull it well down over the lower lid, allowing the lashes of the lower lid to sweep the inside of the upper lid; close the eye and press across the upper lid with the finger, from the outer to the inner corner of the eye; flush the eye with cold water. If these methods fail, take the upper lid by the lashes, lift and turn it back, or place a match or toothpick over middle of the lid and turn it back over the match, cause the patient to roll his eye down, look for the particle and remove it with the corner of a soft handkerchief. A particle under the lower lid is usually easily seen by pulling the lid down and causing the patient to roll the eye upward.

If the eye is splashed with acid flush it with an alkaline solution, such as soda or line. If splashed with alkali, flush with an acid solution, such as dilute vinegar or lemon juice.

Foreign bodies in the ear are usually insects, cinders or vegetable matter. If a live insect, hold a light near the ear, this will often cause it to come out. If not, lay the head on the opposite side and pour a few drops of light oil into the ear. This may kill the insect and float it out. An insect or cinder may be flushed out with water. Never use any liquid to flush out vegetable matter, as this may cause it to swell to a larger size. Lay the head with the affected ear down, on a table, and knock the head against the table, or strike the opposite side with the fist to jar the particle out.

Foreign bodies are usually easily expelled from the nose by closing the mouth and the other nostril and violently expelling air through the affected nostril. If the object is not vegetable matter the free nostril may be syringed with warm water, which will often wash it out.

Foreign bodies in the throat have been discussed under choking.

PRACTICAL WORK.

For practical work in connection with this course the following suggestions are offered:

Written or oral examinations or practical tests may be held, the questions being taken from the text.

Small problems are also readily devised, of which the following are examples:

Explain how a certain disease is transmitted. Then cause the students to show what rules of personal hygiene and general sanitary precautions would be effective in checking the particular disease, showing why in each case.

A member of an organization is definitely known to have a certain disease. What measures shall be taken to prevent the spread of the disease? Explain why in each case.

In a latrine, explain the purpose of every part.

The meaning of air space and ventilation, cleanliness, proper dish washing, care of food, etc., should be demonstrated in barracks or mess, and of course enforced in every camp and cantonment or post.

Lectures by officers or doctors may be used to supplement the course.

Sanitary apparatus of various kinds should be exhibited and its operation explained.

Individual field cooking may be practiced on a march or short encampment. It should first be demonstrated.

First aid should be demonstrated by well-trained men under the direction of the instructor. The students should then be required to practice it (bandaging, splinting, artificial respiration, etc.), after which they should be given a test and rated on proficiency shown. Carrying patients should be included.

CHAPTER X.

MANUAL OF INTERIOR GUARD DUTY.

Introduction.

1. Only those parts of the Manual of Interior Guard Duty that pertain to the duties of a private and can be quickly taught in the class room and in a very limited time on the drill ground are included in this text. The schedule of training for the R. O. T. C (Infantry Units) contemplates that the students will receive during the academic year a short theoretical and practical course pertaining to the duties of a private on guard and that proficiency will be attained during the summer camps where the students will actually perform guard duty and receive additional instruction, both practical and theoretical. Therefore this text is devoted for the most part to the treatment of the duties of a private on guard duty.

Importance of Guard Duty.

2. Guard duty is one of a soldier's most important duties. When on guard a soldier is charged with the protection of his sleeping comrades as well as the protection of government property. His responsibility is indicated by the following quotation from the Manual of Interior Guard Duty: "All persons of whatever rank in the service are required to observe respect toward sentinels." A sentinel, in respect to the duties with which he is charged, represents the superior authority of the command to which he belongs and whose orders he is required to enforce, on or in the vicinity of his post. The manner in which guard duty is performed reflects the training, discipline and esprit of a command.

Different Kinds of Guards.

3. Guards may be divided into four classes:

Exterior guards.

Interior guards.

Military police.

Provost guards.

Exterior guards are used only in time of war and will be fully treated under the subject of minor tactics. The purpose of the exterior guard is to prevent surprise, delay attacks, and otherwise provide security for the main body.

Military police are special guards used during war to perform such duties as guarding prisoners and lines of communications, arresting stragglers and deserters and enforcing police regulations, etc.

Provost guards are used in the absence of military police and generally in conjunction with civil authorities at or near large posts to preserve order among soldiers out of camp (beyond the interior guard).

It is believed sufficient for the student to be familiar with the general duties of the Provost Guard and Military Police as outlined above. However he is expected to have a very much more complete knowledge of Exterior and Interior Guards.

4. *Interior guards* are used in camp or garrison to preserve order, protect property, and to enforce police regulations. In time of war such sentinels of an interior guard as may be necessary are placed in or about a camp, and normally there is an exterior guard further out consisting of outposts. In time of peace the interior

guard is usually the only guard in a camp or garrison. Within the interior guard itself are two classifications which are based on the sort of duty performed. These are:

a. The main guard.

b. Special guards, stable guards, park guards, prisoner guards, etc.

Only the main guard is discussed in this text.

At most camps, interior guards are established and every student who goes there will get practical instruction in guard duty.

The Officer of the Day.

5. The officer of the day is a commissioned officer responsible for the proper performance of duty by the guard with which he marches on and for the enforcement of all police regulations. He inspects the guard and can give orders to any member of it. Each sentinel should know the officer of the day by sight. Do not get the idea that the officer of the day commands the guard. While he is responsible for the manner in which this duty is performed, the commander of the guard commands the guard.

Members of the Interior Guard.

6. The commander of the guard, usually a commissioned officer, commands the guard. He is responsible for the instruction and discipline of its members.

The sergeant of the guard is the senior non-commissioned officer of the guard. He has general supervision over the other non-commissioned officers, the musicians and privates of the guard and he must know thoroughly the duties required of each.

The corporals of the guard command the various reliefs into which the guard is divided. Each corporal of the guard posts and relieves sentinels and instructs the members of his relief in their orders and duties. Therefore in case you feel that you need instruction go to the corporal of your relief.

Privates of the guard are known as sentinels and are assigned to reliefs. Each member of a relief is assigned to a post by the corporal. A relief is on duty (walking post) 2 hours and then off duty 4 hours. Therefore you walk your post 2 hours at a time and then rest for 4 hours. This continues for 24 hours when a new guard marches on duty.

Sentinels.

7. Sentinels on guard duty are vested with power and authority that even the President of the United States must respect. Since guard duty is so important there has grown up in our service a custom of making it more than a mere duty. Anything short of doing it perfectly will be a disappointment to your officers and a violation of the traditions of our army.

Preparations Before Marching on Guard.

8. Just before going on guard duty a soldier should—

1. Clean his rifle thoroughly.

2. Clean and polish his shoes.

3. Put on his best uniform which should be cleaned and pressed.

4. Shave and get his hair cut if it is needed. At least have his hair well combed.

5. Study his general orders.

In a word a private going on guard should be the last word in neatness and cleanliness, both in uniform and equipment.

During the tour of guard duty which is 24 hours, each man should carry himself in such a military manner as to reflect the discipline and training he has received. There is only one way to do guard duty, namely—right.

Orders for Sentinels.

9. Orders for sentinels are of two classes—general orders and special orders. General orders relate to the duties of all sentinels and must therefore be memorized

by every member of the guard. They apply everywhere a guard is maintained. The soldier often memorizes his general orders by rôle and consequently at the first opportunity to apply them, he does not know what to do. Therefore in studying each general order ask yourself this question. What is the necessity for this order or what does it mean? Special orders relate to particular posts and duties. They are designed to insure the fitting of the general orders to the particular locality and situation where the guard happens to be located. Each member of a relief is assigned to a particular post concerning which there are certain special orders that the sentinel on that post must know.

General Orders.

10. Every sentinel is required to memorize the following:

My general orders are:

1. To take charge of this post and all government property in view.
2. To walk my post in a military manner, keeping always on the alert and observing everything that takes place within sight or hearing.
3. To report all violations of orders I am instructed to enforce.
4. To repeat all calls from posts more distant from the guard house than my own.
5. To quit my post only when properly relieved.
6. To receive, obey and pass on to the sentinel who relieves me all orders from the COMMANDING OFFICER, OFFICER OF THE DAY, AND OFFICERS AND NON-COMMISSIONED OFFICERS OF THE GUARD ONLY.
7. To talk to no one except in the line of duty.
8. In case of fire or disorder to give the alarm.
9. To allow no one to commit a nuisance on or near my post.
10. In any case not covered by instructions to call the corporal of the guard.
11. To salute all officers and all colors and standards not cased.
12. To be especially watchful at night and, during the time for challenging, to challenge all persons on or near my post, and to allow no one to pass without proper authority.

General Orders Explained.

11. *General Order No. 1.* "To take charge of this post and all government property in view."

a. The stealing of government property is not an uncommon crime, hence the necessity for this order, which holds a sentinel responsible for all government property on his post or in view of it. To protect this property the sentinel should report to his corporal every unusual or suspicious occurrence noted. Don't be afraid to call the corporal of the guard when anything unusual occurs and when he comes report facts and not beliefs.

b. In carrying out the spirit of this order a sentinel should arrest and turn over to the corporal of the guard the following people:

1. Suspicious persons prowling about the post or camp at any time.
2. Parties to a disorder, such as a fight, occurring on or near his post.
3. Unauthorized persons who attempt to enter camp at night. Your corporal should tell you who are the persons who are authorized to enter camp at night. When you arrest anyone call the corporal of the guard at once.

c. The limits and extent of your post are defined in special orders. Remember, however, that you are responsible for all government property in view. You are only justified in leaving your post in case of a very grave emergency.

12. *General Order No. 2.* "To walk my post in a military manner keeping always on the alert and observing everything that takes place within sight or hearing."

a. The gist of this order is “walk in a military manner,” “be on the alert” and “observe everything within sight or hearing.” It is better and safe to overdo these things than to do them half-heartedly.

b. A sentinel is not required to halt and change the position of his rifle on arriving at the end of his post, nor to execute to the rear march, precisely as prescribed in the drill regulations, but faces about while walking, in the manner most convenient to him, and at any part of his post as may be best suited to the proper performance of his duties. He carries his rifle on either shoulder, and in wet or severe weather, when not in a sentry box, may carry it in such a manner (under his arm) as to protect it from the weather.

c. Sentinels when in sentry boxes stand at ease. Sentry boxes will be used in wet weather only, or at other times when specially authorized by the commanding officer.

d. In very hot weather sentinels may be authorized to stand at ease on their posts, provided they can effectively discharge their duties in this position, but they will take advantage of this privilege *only* on the express authority of the officer of the day or the commander of the guard.

13. *General Order No. 3.* “To report all violations of orders that I am instructed to enforce.”

Common sense should tell the sentry that this rule is most important.

When a sentinel is on post he is usually inspected several times. During these inspections and when he is relieved, he should report any violation of orders that he has noticed. However, if the violation of orders be grave or dangerous, he should call the corporal of the guard or arrest the offender. Remember this rule—When in doubt call the corporal of the guard.

14. *General Order No. 4.* “To repeat all calls from posts more distant from the guard-house than my own.”

This rule is necessary to insure the call getting to the guard-house and getting there quickly. To call the corporal, or the guard, for any purpose other than relief, fire, or disorder, which will be explained later, a sentinel will call, “CORPORAL OF THE GUARD, No. (—),” adding the number of his post. In no case will any sentinel call, “NEVER MIND THE CORPORAL,” nor will the corporal heed such call if given.

Let us assume that you are on post number four (4) and the sentinel on post number five (5), which is further away from the guard-house calls, “Corporal of the Guard, No. 5,” you should come to Port Arms—face towards the guard-house, and yell, “Corporal of the Guard, No. 5.”

15. *General Order No. 5.* “To quit my post only when properly relieved.”

a. The importance of this order cannot be over emphasized. Its necessity is obvious. A sentinel can only be relieved by a person from whom he receives orders. (See General Order No. 6.) A sentinel is not authorized to quit his post even if the relief does not arrive at the proper time or 2 hours later. He can, however, call the corporal of the guard and find out what is wrong.

b. If relief becomes necessary, by reason of sickness or other cause, a sentinel should call, “CORPORAL OF THE GUARD, No. (—), RELIEF,” giving the number of his post.

c. Whenever a sentinel is to be relieved, he will halt and with arms at right shoulder, face towards the relief when it is 30 paces from him. He will come to a port arms with the new sentinel, and in a low tone transmit to him all the special orders relating to the post, and any other information which will assist him to better perform his duties. The accompanying diagram will illustrate the positions taken.

At the command POST, given by the corporal, both sentinels resume the right shoulder, face toward the new corporal and step back so as to allow the relief to pass in front of them. The new corporal then commands: 1. *Forward*, 2. MARCH; the old sentinel takes his place in rear of the relief as it passes him, his piece in the same position as those of the relief. The new sentinel stands fast at right shoulder until the relief has passed six paces beyond him, when he begins to walk his post.

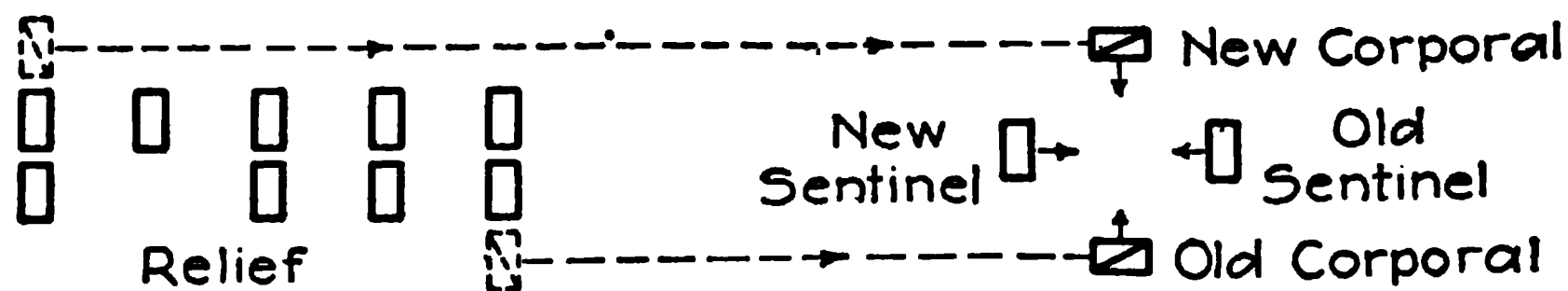


PLATE 268.—Posting a Relief.

16. *General Order No. 6* “To receive, obey and pass on to the sentinel who relieves me all orders from the COMMANDING OFFICER, OFFICER OF THE DAY, AND OFFICERS AND NON-COMMISSIONED OFFICERS OF THE GUARD ONLY.”

a. This order states plainly who has authority to give orders to sentinels and from whom they receive them. During a tour of guard duty a soldier is subject to the orders of the commanding officer, officer of the day, and officers and non-commissioned officers of the guard only; but any officer is competent to investigate apparent violations of regulations by members of the guard.

b. Should an officer other than one authorized to give orders to a sentinel give directions to a sentinel, he (sentinel) should call the corporal of the guard and report the fact to him.

c. A sentinel will quit (give up) his piece on an *explicit* order from any person from whom he lawfully receives orders while on post; under no circumstances will he yield it to any other person. Unless necessity therefor exists, no person will require a sentinel to quit his piece, even to allow it to be inspected.

d. A countersign is a word (usually the name of a battle) given out from headquarters of a command to aid the guard in identifying persons who may be authorized to go in and come out of camp at night. When a countersign is used a person is not allowed during certain hours of the night to pass the guard (line of sentinels) until he has given the countersign.

e. A sentinel will not divulge the countersign to any one except the sentinel who relieves him, or to a person from whom he properly receives orders, on such person's verbal order given personally. Privates of the guard will not use the countersign except in the performance of their duties while posted as sentinels.

17. *General Order No. 7*. “To talk to no one except in the line of duty.”

a. A sentinel is on post to perform a responsible duty. He is therefore not allowed to talk to any one except in line of duty.

b. When calling for any purpose, challenging, or holding communication with any person, a sentinel armed with the rifle, will take the position of port arms. At night a dismounted sentinel, armed with a pistol, takes the position of raised pistol.

18. *General Order No. 8*. “In case of fire or disorder give the alarm.”

a. As fires are quite common on army posts and especially in camp where facilities for extinguishing them are usually very limited, this is a most important order. In case of fire on or near his post, a sentinel will call, “Fire, No. —,” adding the number of his post; if possible, he will extinguish the fire himself. In case of disorder he will call: “The Guard, No. —,” adding the number of his post. If the danger be great, he will, in either case, discharge his piece before calling. If the danger is grave enough to warrant calling the guard, it is probably sufficiently grave to warrant firing the rifle.

19. *General Order No. 9.* "To allow no one to commit a nuisance on or near my post."

A nuisance means any act that is disagreeable, offensive, indecent or unsanitary.

20. *General Order No. 10.* "In any case not covered by instructions to call the corporal of the guard."

This means that when you are in doubt about what to do or say—call the corporal of the guard. Don't be timid about calling the corporal of the guard.

21. *General Order No. 11.* "To salute all officers and all colors and standard not cased."

a. A sentinel salutes all officers at any time and at all hours of the day or night, unless the definite duty on hand at the time makes it impossible. In case of a mounted sentinel or of a dismounted sentinel armed with a pistol, officers are not saluted after challenging begins, this is due to the fact that the position of carrying the weapon as prescribed, under those circumstances, makes it impossible to render the prescribed salute.

b. The following paragraphs, telling you, as a sentinel how and whom to salute, are therefore most important:

Sentinels will salute as follows: A dismounted sentinel armed with a rifle salutes by presenting arms (Plate 269); if otherwise armed he salutes with the right hand.

When a dismounted sentinel sees a person entitled to the salute approaching his post, he waits until the person is about 30 paces away when he (sentinel) halts at right shoulder arms and faces in the direction of the person to be saluted.

The limit within which individuals and insignia of rank can be readily recognized is assumed to be about 30 paces, and therefore at this distance cognizance is taken of the person or party to be saluted.

The salute is rendered at 6 paces; if the person to be saluted does not arrive within that distance, then when he is nearest.

A sentinel in a sentry box, armed with a rifle, stands at attention in the doorway on the approach of a person or party entitled to a salute, and salutes by presenting arms according to the foregoing rules.

Sentinels salute, in accordance with the foregoing rules, all persons and parties entitled to compliments from the guard; officers of the Army, Navy and Marine Corps; military and naval officers of foreign powers; officers of volunteers, and militia and reserve officers when in uniform.

A sentinel salutes as just prescribed when an officer comes on his post; if the officer holds communication with the sentinel, the sentinel again salutes when the officer leaves.

During the hours (usually from 10 p. m. until daylight) when challenging is prescribed, the first salute is given as soon as the officer has been duly recognized and advanced. A dismounted sentinel armed with a pistol does not salute after challenging. He stands at raise pistol until after the officer passes.

In case of the approach of an armed party of the guard, the sentinel will halt when it is about 30 paces from him, facing toward the party with his piece at the right shoulder. If not himself relieved, he will, as the party passes, place himself so that the party will pass in front of him; he resumes walking his post when the party has reached 6 paces beyond him.

A sentinel in communication with an officer will not interrupt the conversation to salute. In the case of seniors the officer talking to the sentinel will salute, whereupon the sentinel will salute.

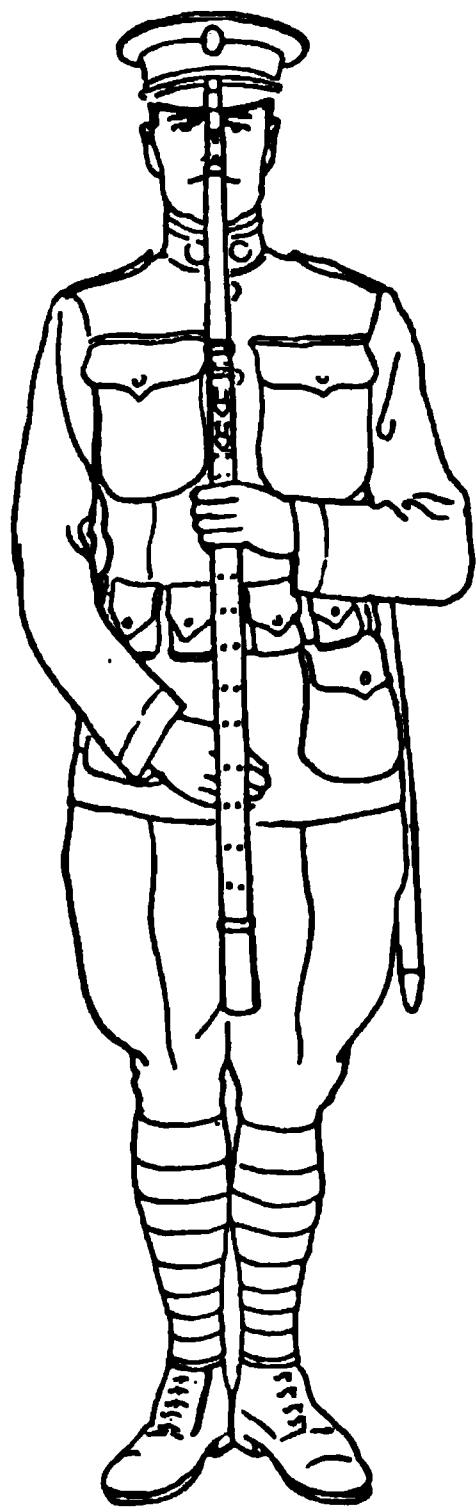


PLATE 269.

When the flag is being lowered at retreat, a sentinel on post and in view of it will face the flag, and at the first note of the "Star Spangled Banner" or "To The Colors" will come to a present arms as shown in Plate 269. At the sounding of the last note he will come to right shoulder arms and resume walking his post. A sentinel salutes the colors by presenting arms as shown in Military Courtesy. (Plate 280.)

22. *General Order No. 12.* "To be especially watchful at night, and, during the time for challenging, to challenge all persons on or near my post, and to allow no one to pass without proper authority."

a. During challenging hours, if a sentinel sees any person or party on or near his post, he will advance rapidly along his post toward such person or party and when within about 30 yards will challenge sharply, "HALT. Who is there?" He will place himself in the best possible position to receive or, if necessary, to arrest the person or party.

b. In case a mounted party be challenged, the sentinel will call "HALT. DISMOUNT. Who is there?"

c. The sentinel will permit only one of any party to approach him for the purpose of giving the countersign, or if no countersign be used, of being duly recognized. When this is done the whole party is advanced, *i. e.*, allowed to pass.

d. In all cases the sentinel must satisfy himself beyond a reasonable doubt that the parties are what they represent themselves to be and have a right to pass. If he is not satisfied, he must cause them to stand and call the corporal of the guard. The sentinels do the same thing if they have no authority to pass persons with the countersign, or when the party has not the countersign, or gives an incorrect one.

e. A sentinel will not permit any person to approach so close as to prevent the proper use of his own weapon before recognizing the person or receiving the countersign.

f. When two or more persons approach in one party, the sentinel on receiving an answer that indicates that some one in the party has the countersign, will say, "Advance one with the countersign," and, if the countersign is given correctly, will then say, "Advance (so and so)," repeating the answer to his challenge. Thus, if the answer be, "Relief (friends with the countersign, patrol, etc.)," the sentinel will say, "Advance one with the countersign"; then, "Advance relief (friends, patrol, etc.)."

g. If a person having the countersign approach alone, he is advanced to give the countersign. Thus, if the answer be, "Friend with the countersign (or officer of the day, or, etc.)," the sentinel will say, "Advance, friend (or officer of the day, or, etc.) with the countersign"; then, after the countersign has been given, "Advance, friend (or officer of the day, or, etc.)."

h. If two or more persons approach a sentinel's post from different directions at the same time, all such persons are challenged in turn and required to halt and to remain halted until advanced.

The senior (see sub-paragraph j) is first advanced, in accordance with the foregoing rules.

i. If a party is already advanced and in communication with a sentinel, the latter will challenge any other party that may approach; if the party challenged be senior to the one already on his post, the sentinel will advance the new party at once. The senior may allow him to advance any or all of the other parties; otherwise the sentinel will not advance any of them until the senior leaves him. He will then advance only the senior of the remaining parties, and so on.

j. The following order of rank will govern a sentinel in advancing different persons or parties approaching his post: Commanding officer, officer of the

day, officer of the guard, officers, patrols, reliefs, non-commissioned officers of the guard in order of rank, friends.

k. A sentinel will never allow himself to be surprised, nor permit two parties to advance upon him at the same time.

l. If no countersign be used, the rules for challenging are the same. The rules for advancing parties are modified only as follows: Instead of saying "Advance (so and so) with the countersign," the sentinel will say, "Advance (so and so) to be recognized." Upon recognition he will say, "Advance (so and so)."

m. Answers to a sentinel's challenge intended to confuse or mislead him are prohibited, but the use of such an answer as "Friends with the countersign," is not to be understood as misleading, but as the usual answer made by officers, patrols, etc., when the purpose of their visit makes it desirable that their official capacity should not be announced.

Special Orders for Sentinels at the Post of the Guard.

23. Sentinels posted at the guard (Post No. 1) will be required to memorize the following:

"Between reveille and retreat to turn out the guard for all persons designated by the commanding officer, for all colors or standards not cased, and in time of war for all armed parties approaching my post, except troops at drill and reliefs and detachments of the guard. At night, after challenging any person or party, to advance no one but call the corporal of the guard, repeating the answer to the challenge."

a. After receiving an answer to his challenge, the sentinel calls, "Corporal of the guard (so and so)," repeating the answer to the challenge.

He does not in such cases repeat the number of his post, which is No. 1.

b. He remains in the position assumed in challenging (port arms) until the corporal has recognized or advanced the person or party challenged, when he resumes walking his post, or, if the person or party be entitled thereto, he salutes and, as soon as the salute has been acknowledged, resumes walking his post.

c. The sentinel at the post of the guard will be notified by direction of the commanding officer of the presence in camp or garrison of persons entitled to the compliment.

d. The following examples illustrate the manner in which the sentinel at the post of the guard will turn out the guard upon the approach of persons or parties entitled to the compliment: "Turn out the guard, Commanding Officer"; "Turn out the guard, National Colors"; "Turn out the guard, armed party," etc.

At the approach of the new guard at guard mounting the sentinel will call "Turn out the guard, armed party."

e. Should the person named by the sentinel not desire the guard formed, he will salute, whereupon the sentinel will call "Never mind the guard."

f. After having called "Turn out the guard," the sentinel will never call "Never mind the guard" on the approach of an armed party.

g. Though the guard be already formed he will not fail to call "Turn out the guard" as required in his special orders except that the guard will not be turned out for any person while his senior is at or coming to the post of the guard.

h. The sentinels at the post of the guard will warn the commander of the approach of any armed body and of the presence in the vicinity of all suspicious or disorderly persons.

i. In case of fire or disorder in sight or hearing, the sentinel at the guard-house will call the corporal of the guard and report the facts to him.

PRACTICAL INSTRUCTION.

(The Student Should Read This Part of the Text Before He Receives His Practical Instruction (Drill) on Guard Duty.)

1. It is not contemplated that the student will become proficient in guard duty before the summer camp, but it is desirable for him to arrive there with sufficient theoretical and practical knowledge of the subject to be able to go on guard as a private. In a word he should be familiar with the fundamental duties of a private on guard.

2. The practical instruction on this subject should therefore include:

1. How a guard comes into existence. (Guard mount.)
2. Relieving the old guard.
3. The posting of reliefs.
4. Inspecting, questioning and instructing the sentinels.
5. Practical instruction in guard duty during the night after challenging commences.

3. In order to carry out such an intensive course of practical instruction in a very limited amount of time, no time should be lost during each drill. Consequently, at the first drill period, it is well to post an old guard consisting of trained men during guard mount so that when the new guard (new men) arrive at the guard-house a guard to be relieved will be in existence.

Guard Mounting.

4. Guard mounting will be formal or informal as the commanding officer may direct. It will be held as prescribed in the drill regulations of the arm of the service to which the guard belongs; if none is prescribed, then as for infantry.

When infantry and mounted troops dismounted are united for guard mounting, all details form as prescribed for infantry.

Formal Guard Mounting for Infantry.

5. Formal guard mounting will ordinarily be held only in posts or camps where a band is present.

At the assembly, the men designated for the guard fall in on their company parade ground as prescribed in the Infantry Drill Regulations. The first sergeant then verifies the detail, inspects it, replaces any man unfit to go on guard, turns the detail over to the senior non-commissioned officer, and retires. The band takes its place on the parade ground so that the left of its front rank shall be 12 paces to the right of the front rank of the guard when the latter is formed.

At adjutant's call, the adjutant, dismounted, and the sergeant major on his left, marches to the parade ground. The adjutant halts and takes post so as to be 12 paces in front of and facing the center of the guard when formed; the sergeant major continues on, moves by the left flank, and takes post, facing to the left, 12 paces to the left of the front rank of the band. (Plate 270.)

The band plays in quick or double time; the details are marched to the parade ground by the senior non-commissioned officers; the detail that arrives first is marched to the line so that, upon halting, the breast of the front-rank man shall be near to and opposite the left arm of the sergeant major; the commander of the detail halts his detail, places himself in front of and facing the sergeant major, at a distance equal to or a little greater than the front of his detail, and commands: 1. *Right*, 2. *DRESS*. The detail dresses up to the line of the sergeant major and its commander, the right front-rank man placing his breast against the left arm of the sergeant major; the non-commissioned officers take post two paces in rear of the rear rank of the detail. The detail aligned, the commander of the detail commands: *FRONT*, salutes, and then reports: "The detail is correct"; or "(so many) sergeants, corporals, or privates are absent." The sergeant major returns the salute with the right hand after the report is made; the commander then passes by the

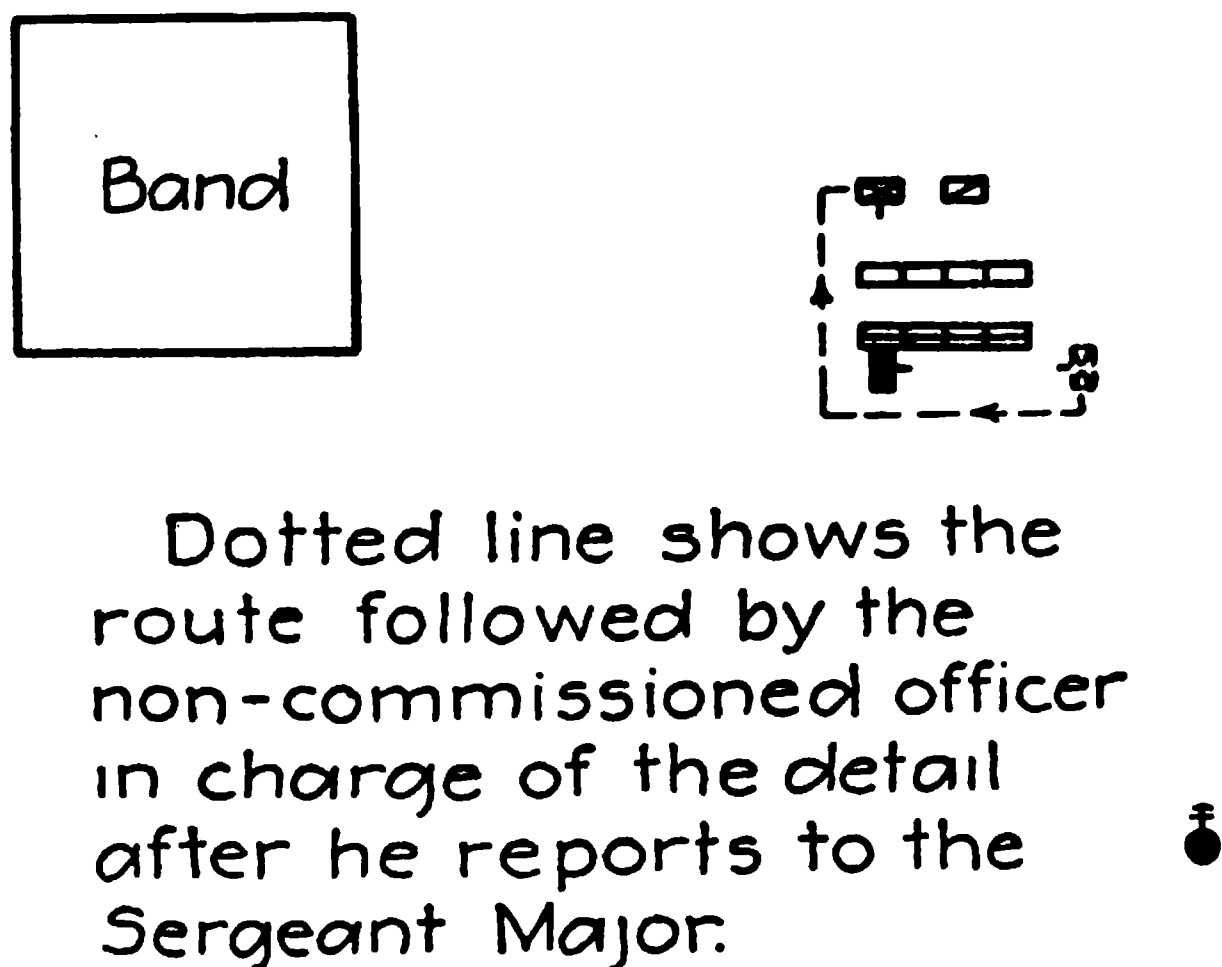
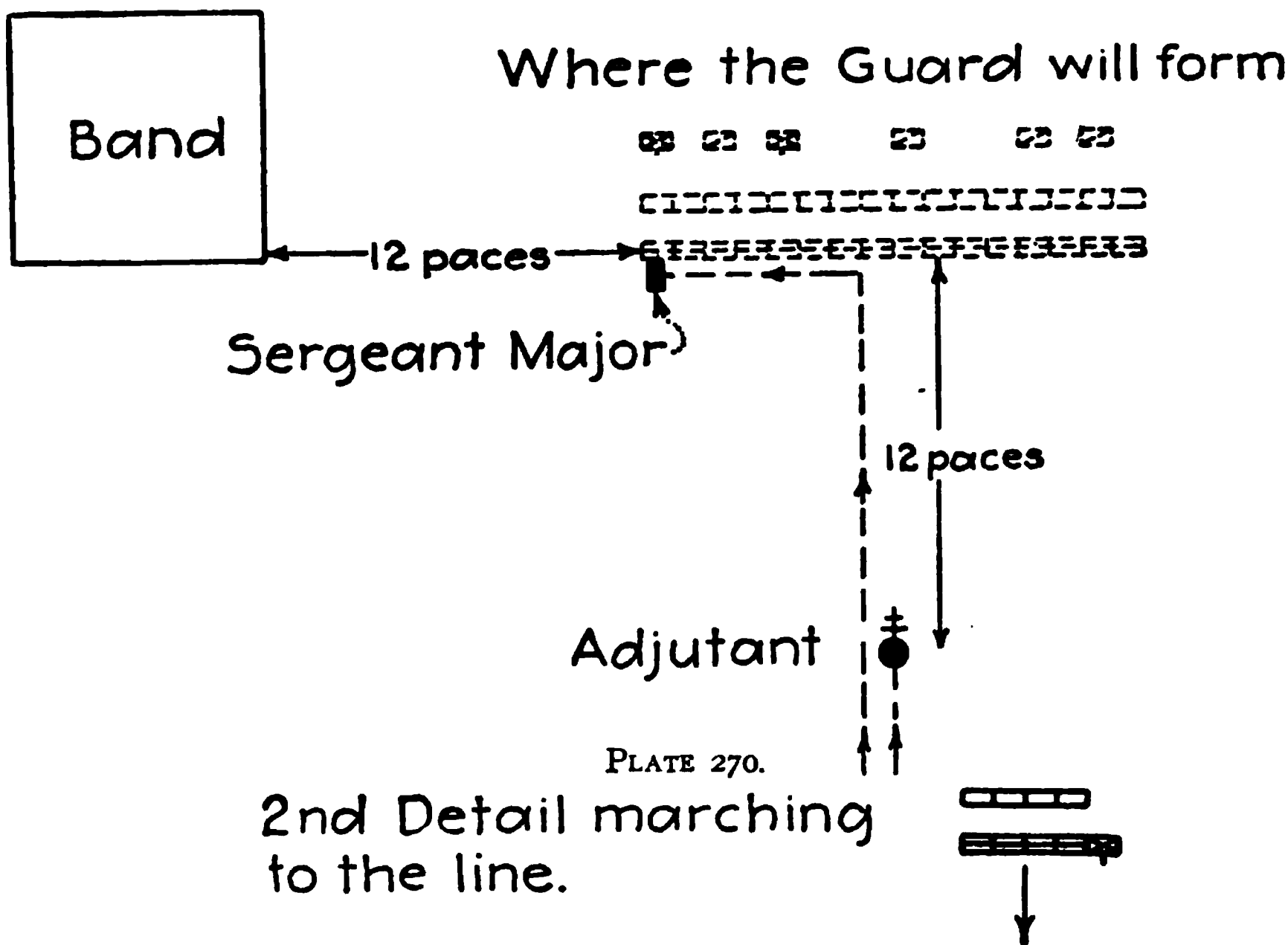
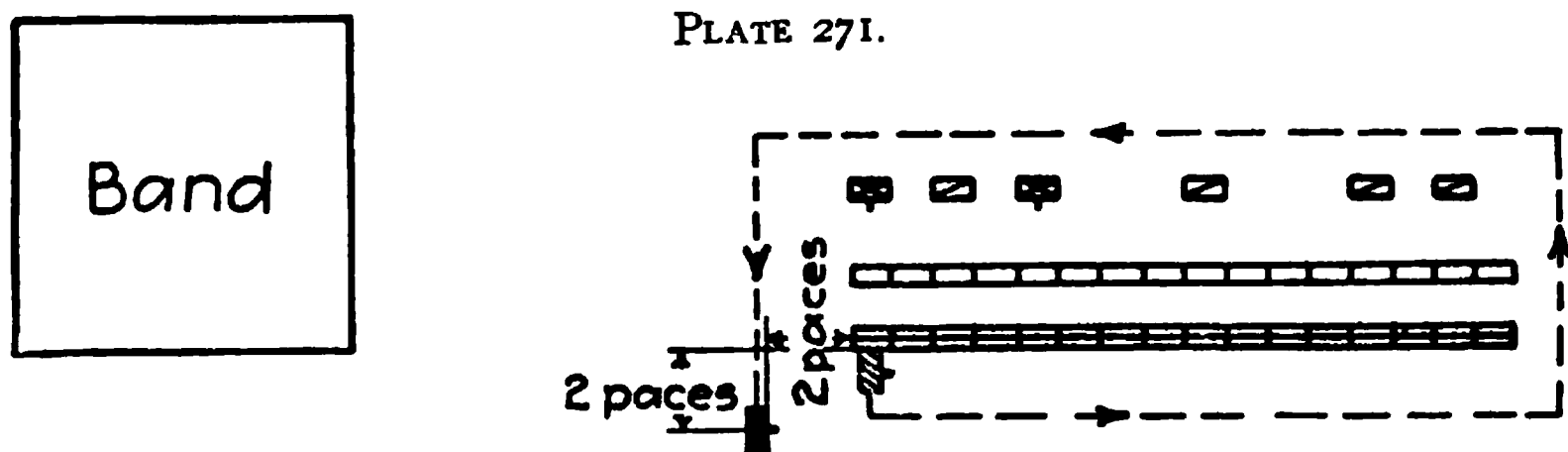


PLATE 271.



Dotted line shows the route followed by the Sergeant Major in verifying the detail.

PLATE 272.

right of the guard and takes post in the line of non-commissioned officers in rear of the right file of his detail. (Plate 271.)

Should there be more than one detail, it is formed in like manner on the left of the one preceding; the privates, non-commissioned officers, and commander of each detail dress on those of the preceding details in the same rank or line; each detail commander closes the rear rank to the right and fills blank files, as far as practicable, with the men from his front rank.

Should the guard from a company not include a non-commissioned officer, one will be detailed to perform the duties of commander of the detail. In this case the

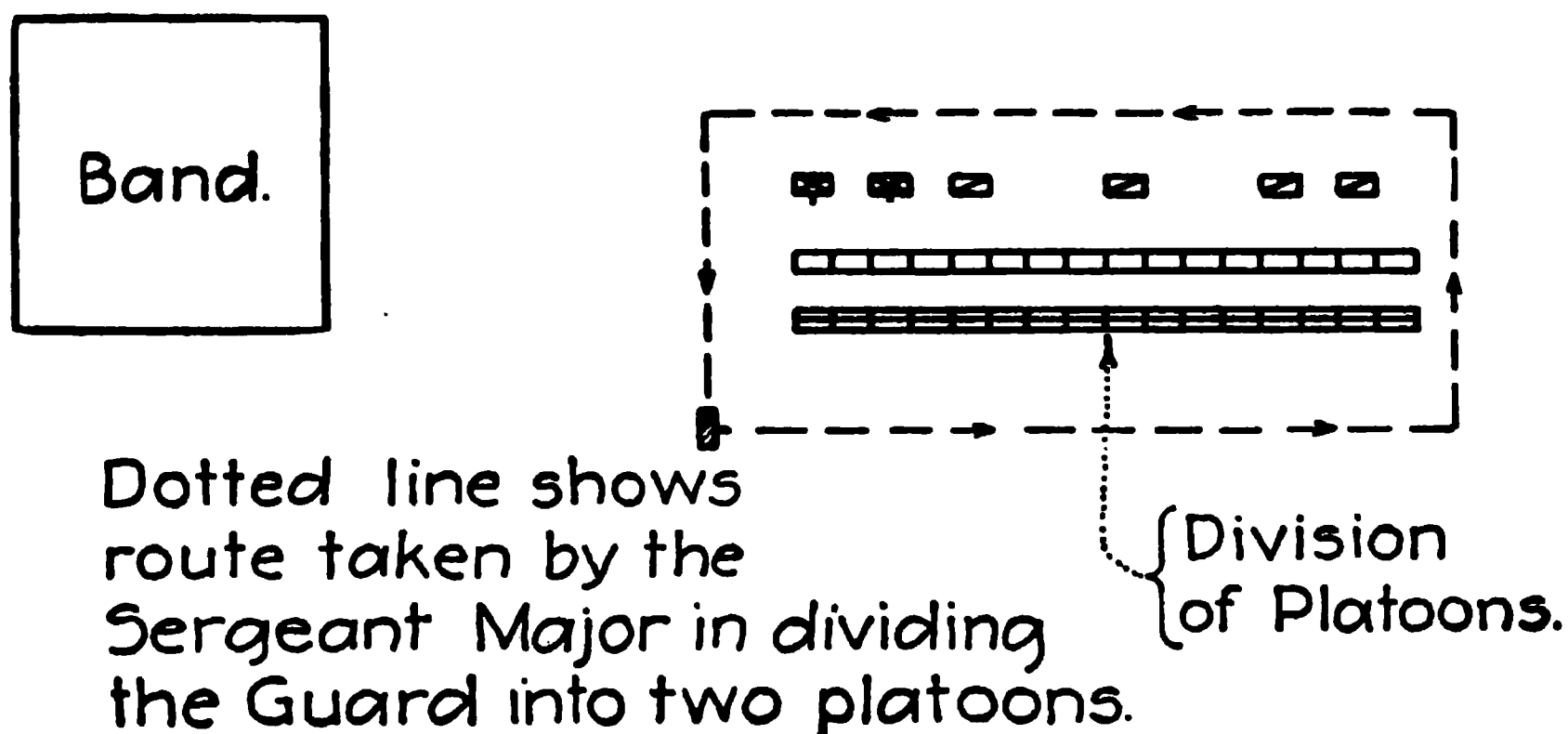


PLATE 273.

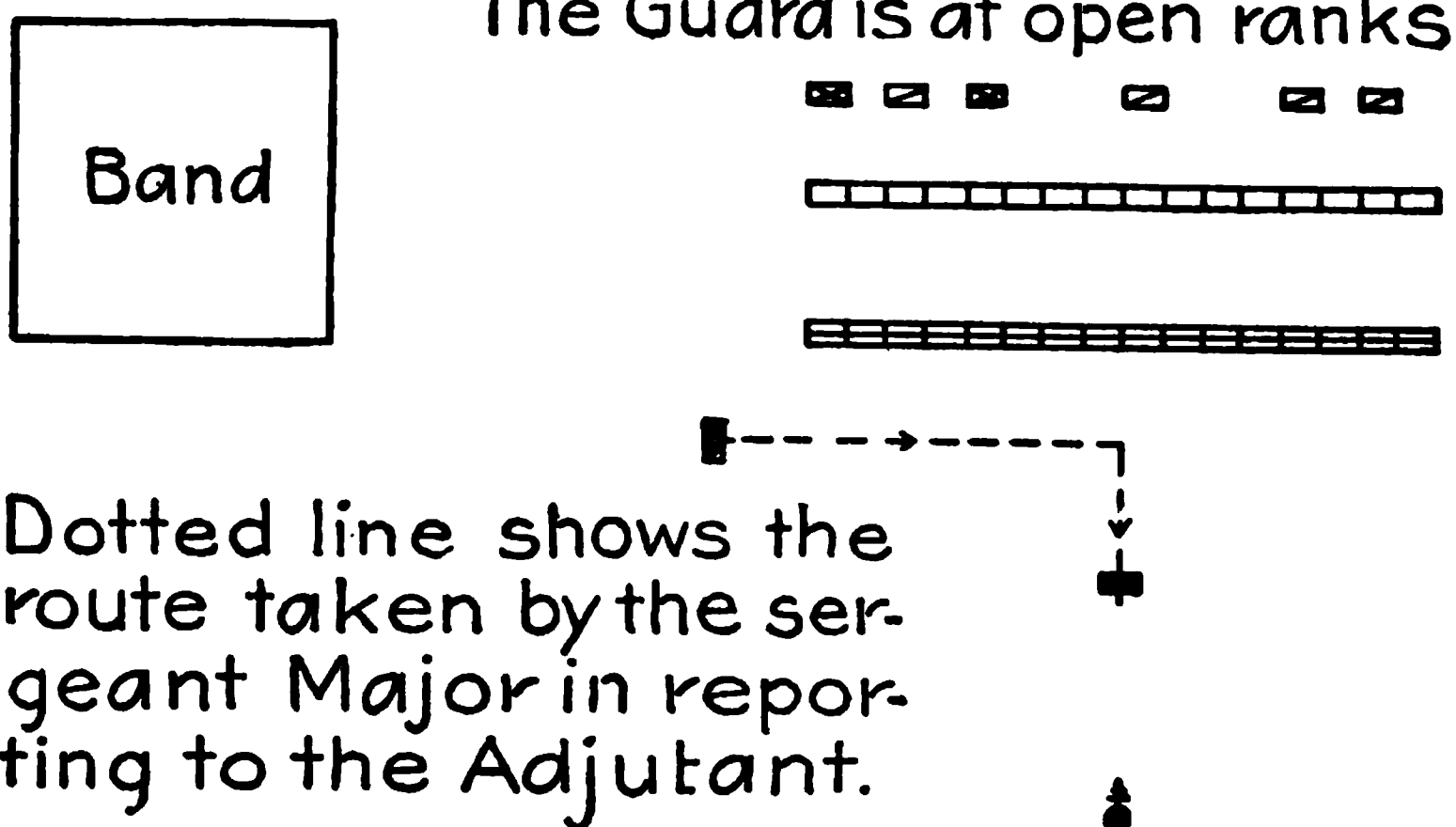


PLATE 274.

commander of the detail, after reporting to the sergeant major, passes around the right flank between the guard and the band and retires.

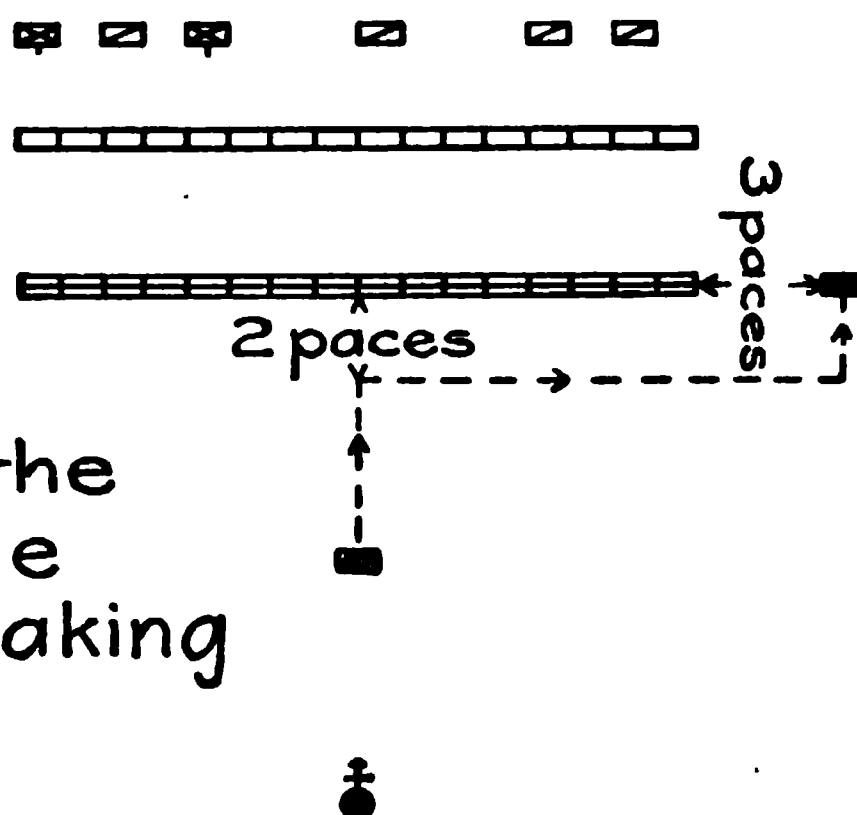
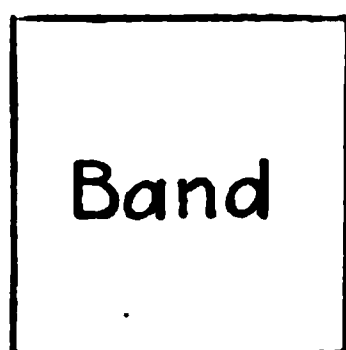
When the last detail has formed, the sergeant major takes a side step to the right, draws sword, verifies the detail, takes post two paces to the right and two paces to the front of the guard, facing to the left. (Plate 272.)

The sergeant major causes the guard to count off, completes the left squad, if necessary, as in the school of the company, and if there be more than three squads, divides the guard into two platoons, again takes post as described above and commands: 1. *Open ranks*, 2. MARCH. (Plate 273.)

At the command MARCH, the rear rank and file closers march backward four steps, halt, and dress to the right. The sergeant major aligns the ranks and file

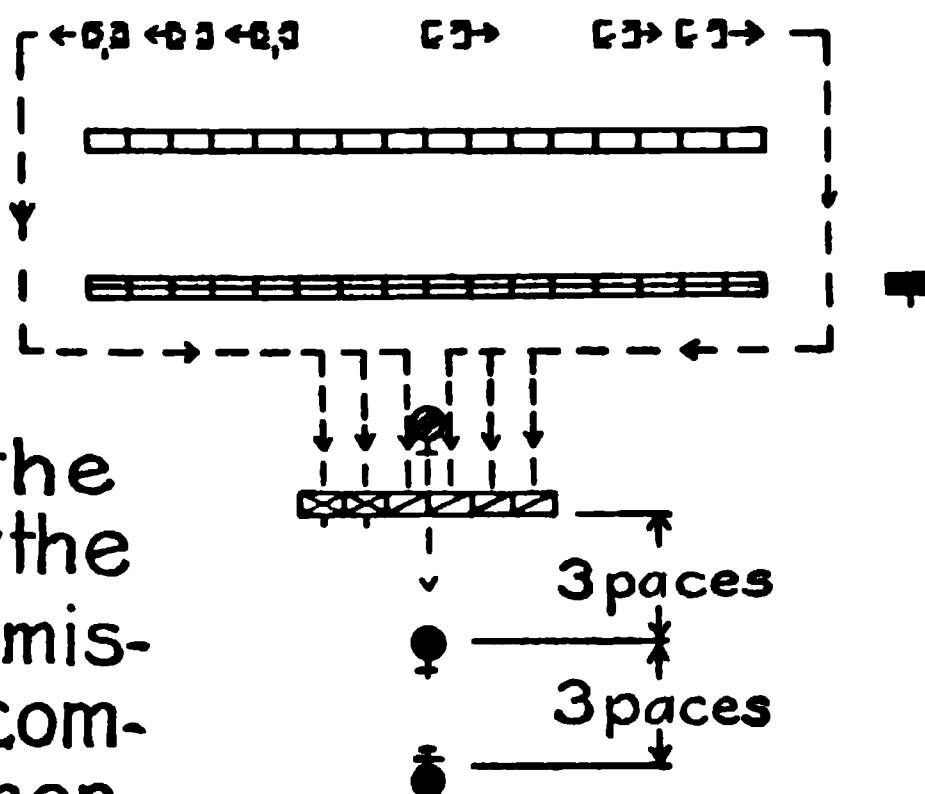
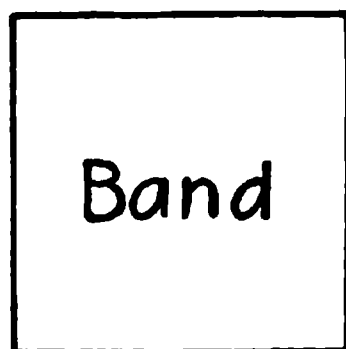
closers and again, taking post as described above, commands: FRONT, moves parallel to the front rank until opposite the center, turns to the right, halts midway to the adjutant, salutes, and reports: "Sir, the details are correct"; or "Sir (so many) sergeants, corporals, or privates are absent." (Plate 274.)

The adjutant returns the salute, directs the sergeant major: "Take your post," and then draws saber; the sergeant major faces about, approaches to within two paces of the center of the front rank, turns to the right, moves three paces beyond the left of the front rank, turns to the left, halts on the line of the front rank,



Dotted line shows the route followed by the Sergeant Major in taking his post.

PLATE 275.



Dotted lines show the routes followed by the officer and non-commissioned officer at the command: 1. Officer and non-commissioned officers, 2. Front and center, 3. MARCH.

PLATE 276.

faces about, and brings his saber to the order. (Plate 275.) When the sergeant major has reported, the officer of the guard takes post, facing to the front, three paces in front of the center of the guard, and draws saber.

The adjutant then commands: 1. *Officer (or officers) and non-commissioned officers*, 2. *Front and center*, 3. MARCH.

At the command "*center*," the officers carry saber. At the command MARCH, the officer advances and halts three paces from the adjutant, remaining at the carry; the non-commissioned officers pass by the flanks, along the front, and form in order of rank from right to left, three paces in rear of the officer, remaining at the right shoulder. (Plate 276.)

If there is no officer of the guard the non-commissioned officers form according to rank, as follows: Commander of the guard, leader of first platoon, leader of second platoon, right guide of first platoon, left guide of second platoon, left guide of first platoon, right guide of second platoon, and file closers, or, if the guard is not divided into platoons: Commander of the guard, right guide, left guide, and file closers. (Plate 277.)

The adjutant then commands: 1. *Officer (or officers) and non-commissioned officers*, 2. POSTS. 3. MARCH.

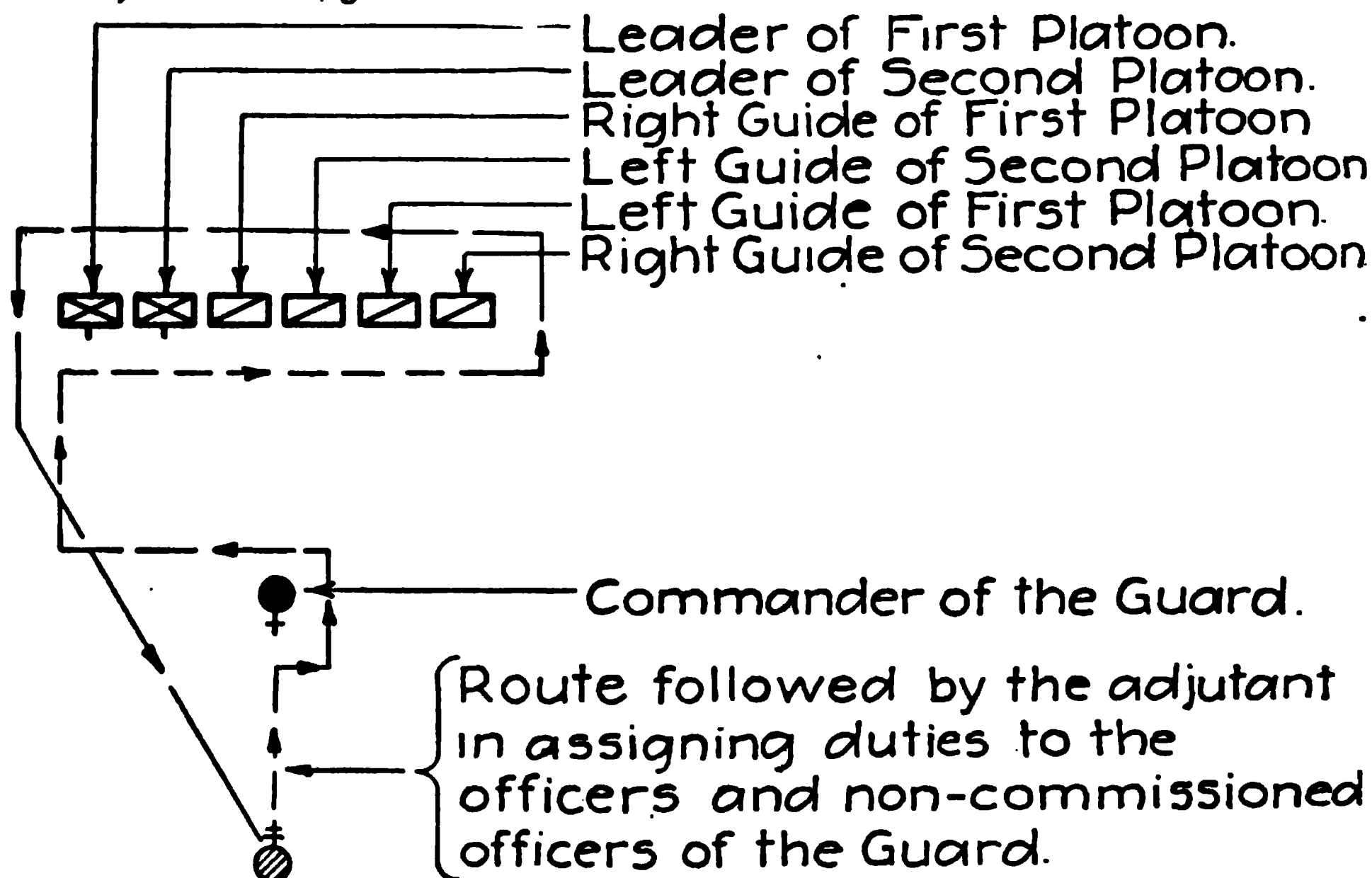
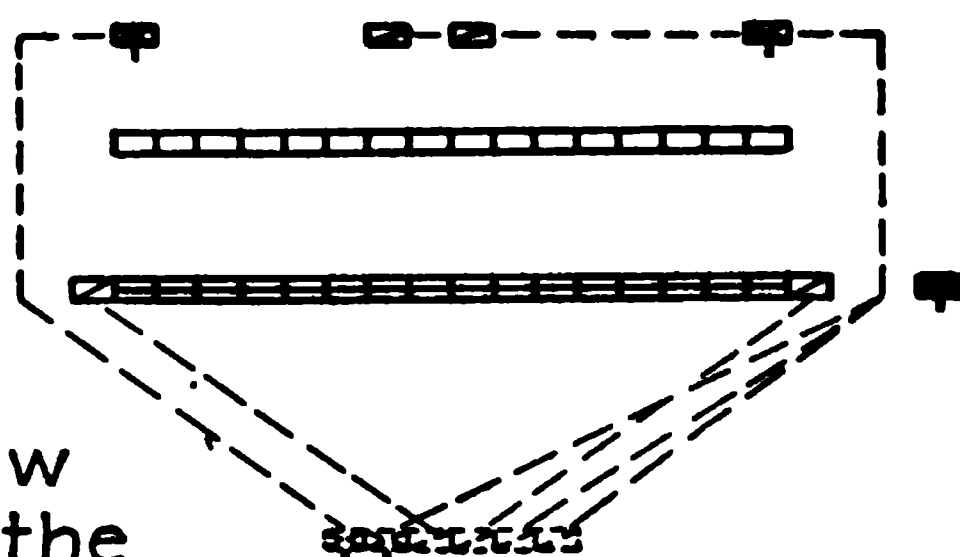
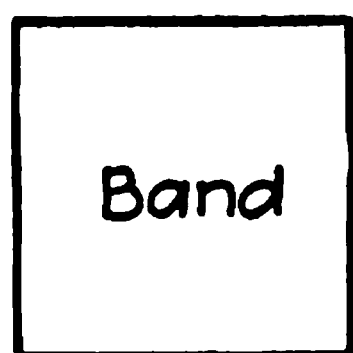


PLATE 277.



Dotted lines show route taken by the non-commissioned officers in going to their posts.

PLATE 278.

At the command POSTS, all except the officer commanding the guard, face about. At the command MARCH, they take the posts prescribed in the school of the company with open ranks. (Plate 278.)

The adjutant directs: "Inspect your guard, sir"; at which the officer commanding the guard faces about, commands: "Prepare for inspection," returns saber, and inspects the guard.

During the inspection, the band plays; the adjutant returns saber, observes the general condition of the guard, and falls out any man who is unfit for guard duty or

does not present a creditable appearance. Substitutes will report to the commander of the guard at the guard-house.

The adjutant, when so directed, selects orderlies and color sentinels, as prescribed, and notifies the commander of the guard of his selection.

If there be a junior officer of the guard he takes post at the same time as the senior, facing to the front, three paces in front of the center of the first platoon; in going to the front and center he follows and takes position on the left of the

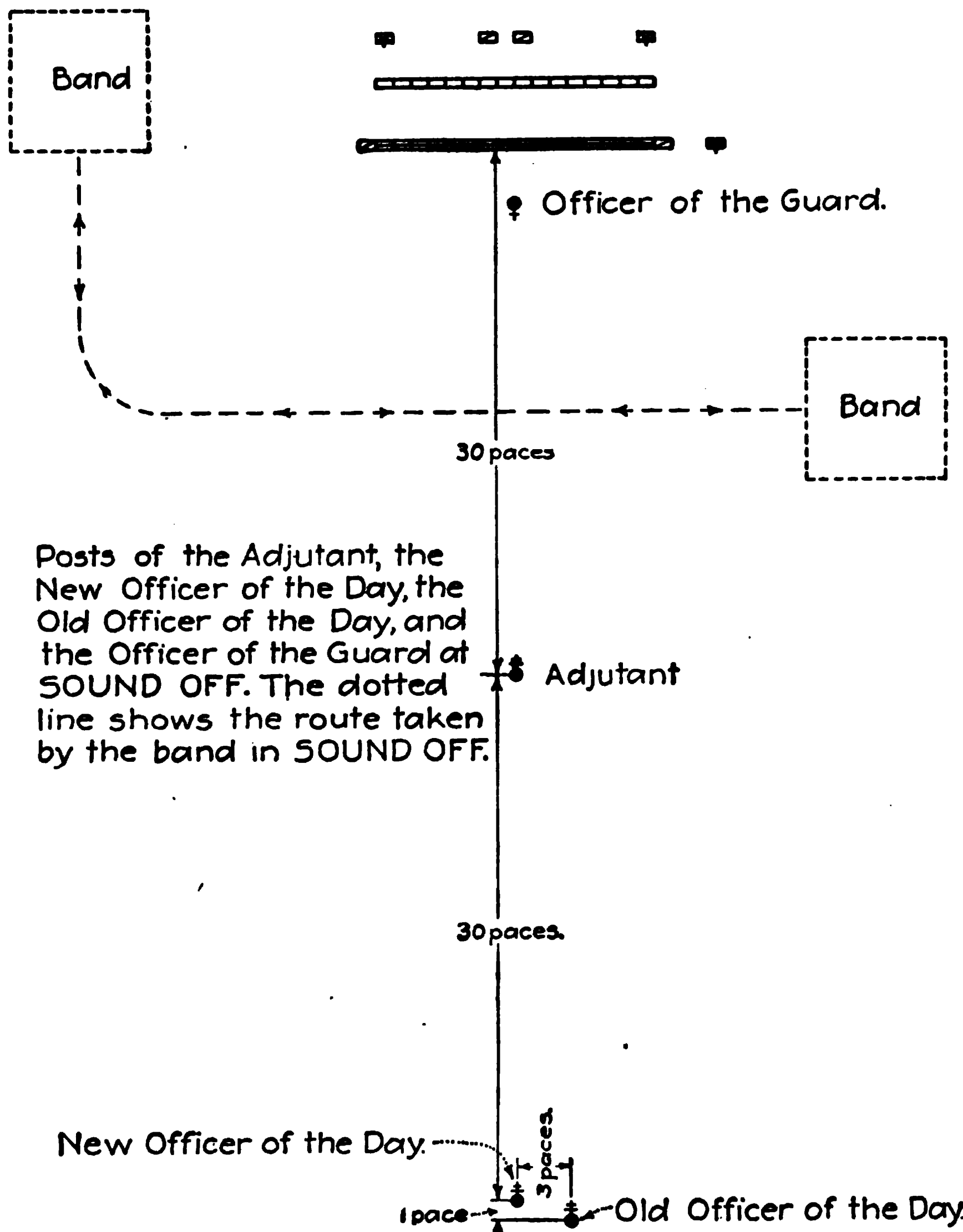


PLATE 279.

senior and is assigned as leader of the first platoon; he may be directed by the commander of the guard to assist in inspecting the guard.

If there be no officer of the guard, the adjutant inspects the guard. A non-commissioned officer commanding the guard takes post on the right of the guide, when the guard is in line; and takes the post of the officer of the guard, when in column or passing in review.

The inspection ended, the adjutant places himself about 30 paces in front of and facing the center of the guard, and draws saber; the new officer of the day takes post in front of and facing the guard, about 30 paces from the adjutant; the old officer of the day takes post three paces to the right of and one pace to the rear of the new officer of the day; the officer of the guard takes post three paces in front of its center, draws saber with the adjutant and comes to the order; thereafter he takes the same relative positions as a captain of a company. (Plate 279.)

The adjutant then commands: 1. *Parade*, 2. REST, 3. SOUND OFF, and comes to the order and parade rest.

The band, playing, passes in front of the officer of the guard to the left of the line, and back to its post on the right, when it ceases playing.

The adjutant then comes to attention, carries saber, and commands: 1. *Guard*, 2. ATTENTION, 3. *Close ranks*, 4. MARCH.

The ranks are opened and closed as prescribed in the I. D. R.

The adjutant then commands: 1. *Present*, 2. ARMS, faces toward the new officer of the day, salutes, and then reports: "Sir, the guard is formed." The new officer of the day, after the adjutant has reported, returns the salute with the hand and directs the adjutant: "March the guard in review, sir."

The adjutant carries saber, faces about, brings the guard to an order, and commands: 1. *At trail, platoons (or guard) right*, 2. MARCH, 3. *Guard*, 4. HALT.

The platoons execute the movement; the band turns to the right and places itself 12 paces in front of the first platoon.

The adjutant places himself six paces from the flank and abreast of the commander of the guard; the sergeant major, six paces from the left flank of the second platoon. (Plate 280.)

The adjutant then commands: 1. *Pass in review*, 2. *Forward*, 3. MARCH.

The guard marches in quick time past the officer of the day, according to the principles of review, and is brought to "eyes right" at the proper time by the commander of the guard; the adjutant, commander of the guard, leaders of platoons, sergeant major, and drum major salute.

The band, having passed the officer of the day, turns to the left out of the column, places itself opposite and facing him, and continues to play until the guard leaves the parade ground. The field music detaches itself from the band when the latter turns out of the column, and, remaining in front of the guard, commences to play when the band ceases.

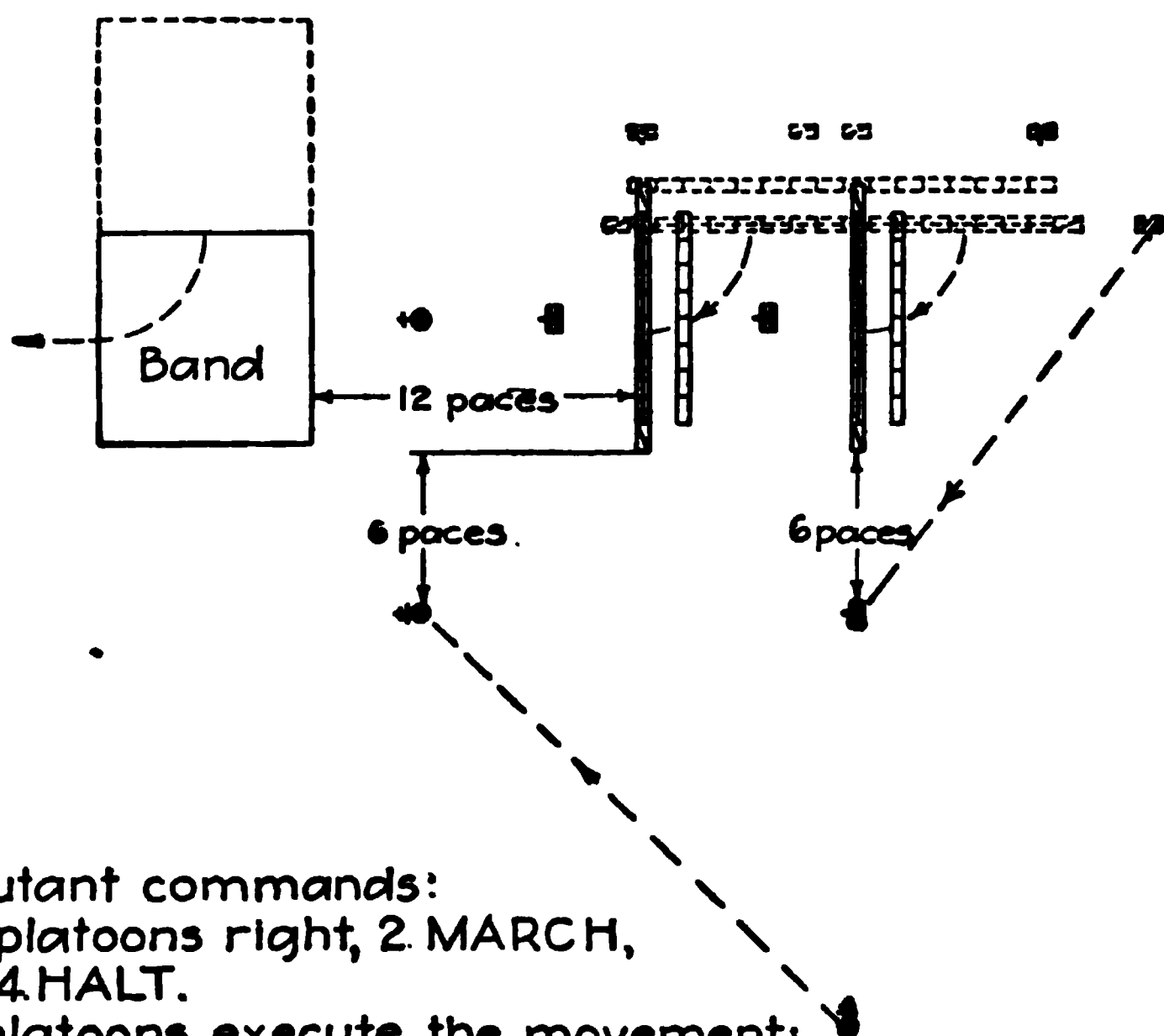
Having passed 12 paces beyond the officer of the day, the adjutant halts; the sergeant major halts abreast of the adjutant and one pace to his left; they then return saber, salute, and retire; the commander of the guard then commands: 1. *Platoons, right by squads*, 2. MARCH, and marches the guard to its post.

The officers of the day face toward each other and salute; the old officer of the day turns over the orders to the new officer of the day.

While the band is sounding off, and while the guard is marching in review, the officers of the day stand at parade rest with arms folded. They take this position when the adjutant comes to parade rest, resume the attention with him, again take the parade rest at the first note of the march in review, and resume attention as the head of the column approaches.

The new officer of the day returns the salute of the commander of the guard and the adjutant, making one salute with the hand.

If the guard be not divided into platoons, the adjutant commands: 1. *At trail, guard right*, 2. MARCH, 3. *Guard*, 4. HALT, and it passes in review as described above; the commander of the guard is three paces in front of its center; the adjutant places himself six paces from the left flank and abreast of the commander of the guard; the sergeant major covers the adjutant on a line with the front rank.



The Adjutant commands:

1. At trail, platoons right, 2. MARCH,
3. Guard, 4. HALT.

The platoons execute the movement; the band turns to the right and places itself 12 paces in front of the first platoon.

The adjutant places himself 6 paces from the flank and abreast of the commander of the guard; the sergeant major, 6 paces from the left flank of the second platoon.

The adjutant then commands:

1. Pass in review, 2. Forward, 3. MARCH.

PLATE 280.

Informal Guard Mounting for Infantry.

6. Informal guard mounting will be held on the parade ground of the organization from which the guard is detailed. If it is detailed from more than one organization, then at such place as the commanding officer may direct.

At assembly, the detail for guard falls in on the company parade ground. The first sergeant verifies the detail, inspects their dress and general appearance, and replaces any man unfit to march on guard. He then turns the detail over to the commander of the guard and retires.

At adjutant's call, the officer of the day takes his place 15 paces in front of the center of the guard and commands: 1. *Officer (or officers) and non-commissioned officers*, 2. *Front and center*, 3. MARCH, whereupon the officers and non-commissioned officers take their positions, are assigned and sent to their posts as prescribed in formal guard mounting.

The officer of the day will then inspect the guard with especial reference for its fitness for the duty for which it is detailed, and will select the necessary orderlies and color sentinels. The men found unfit for guard will be returned to quarters and will be replaced by others found to be suitable, if available in the company. If none are available in the company, the fact will be reported to the adjutant immediately after guard mounting.

When the inspection shall have been completed, the officer of the day resumes his position and directs the commander of the guard to march the guard to its post.

Relieving the Old Guard.

7. As the new guard approaches the guard-house, the old guard is formed in line, with its field music three paces to its right; and when the field music at the head of the new guard arrives opposite its left, the commander of the new guard commands: 1. *Eyes*, 2. *RIGHT*; the commander of the old guard commands: 1. *Present*, 2. *ARMS*; commanders of both guards salute. The new guard marches in quick time past the old guard.

When the commander of the new guard is opposite the field music of the old guard, he commands: *FRONT*; the commander of the old guard commands: 1. *Order*, 2. *ARMS*, as soon as the new guard shall have cleared the old guard.

The field music having marched three paces beyond the field music of the old guard, changes direction to the right, and, followed by the guard, changes direction to the left when on a line with the old guard; the changes of direction are without command. The commander of the guard halts on the line of the front rank of the old guard, allows his guard to march past him, and when its rear approaches, forms it in line to the left, establishes the left guide three paces to the right of the field music of the old guard, and on a line with the front rank, and then dresses his guard to the left; the field music of the new guard is three paces to the right of its front rank.

The new guard being dressed, the commander of each guard, in front of and facing its center, commands: 1. *Present*, 2. *ARMS*, resumes his front, salutes, carries saber, faces his guard and commands: 1. *Order*, 2. *ARMS*.

Should a guard be commanded by a non-commissioned officer, he stands on the right or left of the front rank, according as he commands the old or new guard, and executes the rifle salute.

After the new guard arrives at its post, and has saluted the old guard, each guard is presented by its commander to its officer of the day; if there be but one officer of the day present, or if one officer acts in the capacity of old and new officer of the day, each guard is presented to him by its commander.

If other persons entitled to a salute approach, each commander of the guard will bring his own guard to attention if not already at attention. The senior commander of the two guards will then command: "1. *Old and new guards*, 2. *Present*, 3. *ARMS*."

The junior will salute at the command "*Present ARMS*" given by the senior. After the salute has been acknowledged, the senior brings both guards to the order.

After the salutes have been acknowledged by the officers of the day, each guard is brought to an order by its commander, the commander of the new guard then directs the orderly or orderlies to fall out and report, and causes bayonets to be fixed if so ordered by the commanding officer; bayonets will not then be unfixed during the tour except in route marches while the guard is actually marching, or when specially directed by the commanding officer.

The commander of the new guard then falls out members of the guard for detached posts, placing them under charge of the proper non-commissioned officers, divides the guard into three reliefs, first, second, and third, from right to left, and directs a list of the guard to be made by reliefs. When the guard consists of troops of different arms combined, the men are assigned to reliefs so as to insure a fair division of duty, under rules prescribed by the commanding officer.

The sentinels and detachments of the old guard are at once relieved by members of the new guard; the two guards standing at ease or at rest while these changes are being made. The commander of the old transmits to the commander of the new guard all his orders, instructions, and information concerning the guard and its duties. The commander of the new guard then takes possession of the guard-house and verifies the articles in charge of the guard.

If considerable time is required to bring in that portion of the old guard still on post, the commanding officer may direct that as soon as the orders and property are turned over to the new guard, the portion of the old guard at the guard-house may be marched off and dismissed. In such a case, the remaining detachment or detachments of the old guard will be inspected by the commander of the new guard when they reach the guard-house. He will direct the senior non-commissioned officer present to march these detachments off and dismiss them in the prescribed manner.

In bad weather, at night, after long marches, or when the guard is very small, the field music may be dispensed with.

The Posting of a Relief.

8. Immediately after the division of the guard into reliefs the corporals will assign the members of their respective reliefs to post by number, and a soldier so assigned to his post will not be changed to another during the same tour of guard duty, unless by direction of the commander of the guard or higher authority. Usually, experienced soldiers are placed over the arms of the guard, and at remote and responsible posts.

Each corporal will then make a list of the members of his relief, including himself. This list will contain the number of the relief, the name, the company, and the regiment of every member thereof, and the post to which each is assigned. The

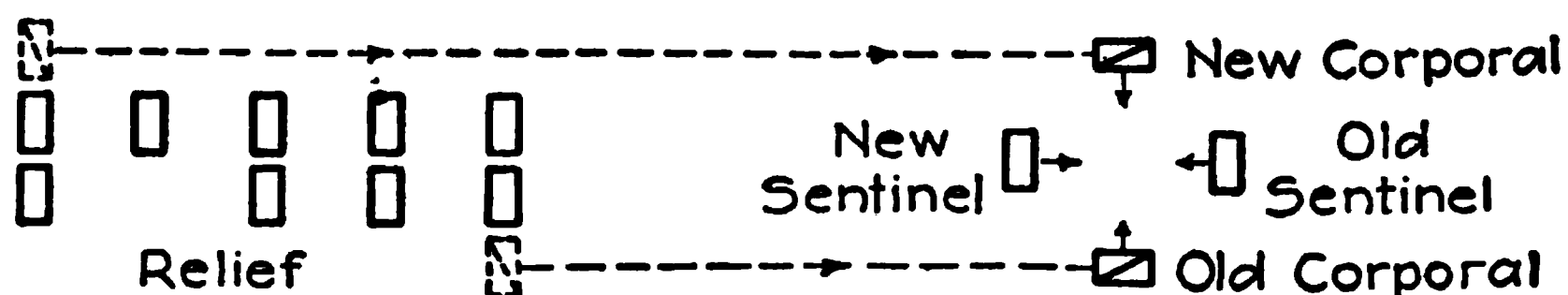


PLATE 281.—Posting a Relief.

list will be made in duplicate, one copy to be given to the sergeant of the guard as soon as completed, the other to be retained by the corporal.

When directed by the commander of the guard, the corporal of the first relief forms his relief, and then commands: **CALL OFF.**

Commencing on the right, the men call off alternately rear and front rank, "one," "two," "three," "four," and so on; if in single rank, they call off from right to left. The corporal then commands: 1. *Right*, 2. *FACE*, 3. *Forward*, 4. **MARCH.**

The corporal marches on the left, and near the rear file, in order to observe the march. The corporal of the old guard marches on the right of the leading file, and takes command when the last one of the old sentinels is relieved, changing places with the corporal of the new guard.

When the relief arrives at six paces from a sentinel, the corporal halts it and commands, according to the number of the post: No. (—).

Both sentinels execute port arms or saber; the new sentinel approaches the old, halting about one pace from him.

The corporals advance and place themselves, facing each other, a little in advance of the new sentinel, the old corporal on his right, the new corporal on his left, both at a right shoulder, and observe that the old sentinel transmits correctly his instructions.

The preceding diagram will illustrate the positions taken.

The instructions relative to the post having been communicated, the new corporal commands, **POST**; both sentinels then resume the right shoulder, face toward the

new corporal, and step back so as to allow the relief to pass in front of them. The new corporal then commands: 1. *Forward*, 2. MARCH; the old sentinel takes his place in rear of the relief as it passes him, his piece in the same position as those of the relief. The new sentinel stands fast at a right shoulder until the relief has passed six paces beyond him, when he walks his post. The corporals take their places as the relief passes them.

On the return of the old relief, the corporal of the new guard falls out when the relief halts; the corporal of the old guard forms his relief on the left of the old guard, salutes, and reports to the commander of his guard: "Sir, the relief is present"; or "Sir (so and so) is absent," and takes his place in the guard.

To post a relief other than that which is posted when the old guard is relieved, its corporal commands: 1. (Such) *Relief*, 2. FALL IN; and if arms are stacked, they are taken at the proper commands.

The relief is formed facing to the front, with arms at an order; the men place themselves according to the numbers of their respective posts, viz., two, four, six, and so on, in the front rank, and one, three, five, and so on, in the rear rank. The corporal, standing about two paces in front of the center of his relief, then commands: CALL OFF.

The men call off as prescribed. The corporal then commands: 1. *Inspection*, 2. ARMS, 3. *Order*, 4. ARMS; faces the commander of the guard, executes the rifle salute, reports: "Sir, the relief is present," or "Sir (so and so), is absent"; he then takes his place on the right at order arms.

When the commander of the guard directs the corporal: "Post your relief," the corporal salutes and posts his relief as prescribed; the corporal of the relief on post does not go with the new relief, except when necessary to show the way.

To dismiss the old relief, it is halted and faced to the front at the guard-house by the corporal of the new relief, who then falls out; the corporal of the old relief then steps in front of the relief and dismisses it by the proper commands.

Should the pieces have been loaded before the relief was posted, the corporal will, before dismissing the relief, see that no cartridges are left in the chambers or magazines. The same rule applies to sentinels over prisoners.

PART III
THIRD YEAR

CHAPTER XI.

INFANTRY DRILL REGULATIONS.

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CHAPTER XI.

INFANTRY DRILL REGULATIONS. CEREMONIES.

General Rules.

222. The order in which the troops of the various arms are arranged for ceremonies is prescribed in Army Regulations.

When forming for ceremonies, the companies of the battalions, and battalions of the regiment are posted from right to left in line and from head to rear in column, in the order of rank of their respective commanders, the senior on the right or at the head, unless otherwise directed by the proper commanding officer.

This rule is often changed or modified in units in order to have uniformity in height or appearances.

The commander (major or colonel) faces the command; subordinate commanders (captains, lieutenants, and in the case of a regiment, majors) face to the front.

223. At the command *present arms*, given by the commanding officer of the troops, his staff salutes; the major's staff salutes at the major's command; other staffs salute with their commanders; the lieutenant-colonel salutes with colonel's staff.

For ceremonies, such of the regimental and battalion non-commissioned staff officers as are dismounted are formed five paces in rear of the color in order of rank from right to left. In column of squads they march as file closers.

224. At the assembly for a ceremony, companies are formed on their own parades and informally inspected.

At adjutant's call, except for ceremonies involving a single battalion, each battalion is formed on its own parade, reports are received and the battalion presented to the major. At the second sounding of adjutant's call, the regiment is formed.

225. Formations for ceremonies may be modified to suit the ground.

226. In commands in which the average strength of companies is less than nine squads, each unit will adopt the formations prescribed for the next lower unit, *i. e.*, the company will be formed as a platoon, the battalion as a company, etc.

For ceremonies, members of a company headquarters are posted in the line of file closers, or formed as an extra squad of a platoon, or are used to fill blank files.

REVIEWS.

General Rules.

227. The adjutant posts men or otherwise marks the line of march of the column in such manner that its flank in passing will be about 20 paces from the reviewing officer. This is usually done by placing small flags at the point for each change of direction and one flag is placed somewhat beyond the reviewing officer to enable the right guides to maintain the proper direction of march.

The post of the reviewing officer is indicated by a marker (flag).

228. The reviewing officer and others at the reviewing stand salute the color as it passes; when passing around the troops, the reviewing officer and those accompanying him salute the color when passing in front of it.

The reviewing officer returns the salute of the commanding officer of the troops only. Those who accompany the reviewing officer do not salute.

229. In passing in review, each staff salutes with its commander.

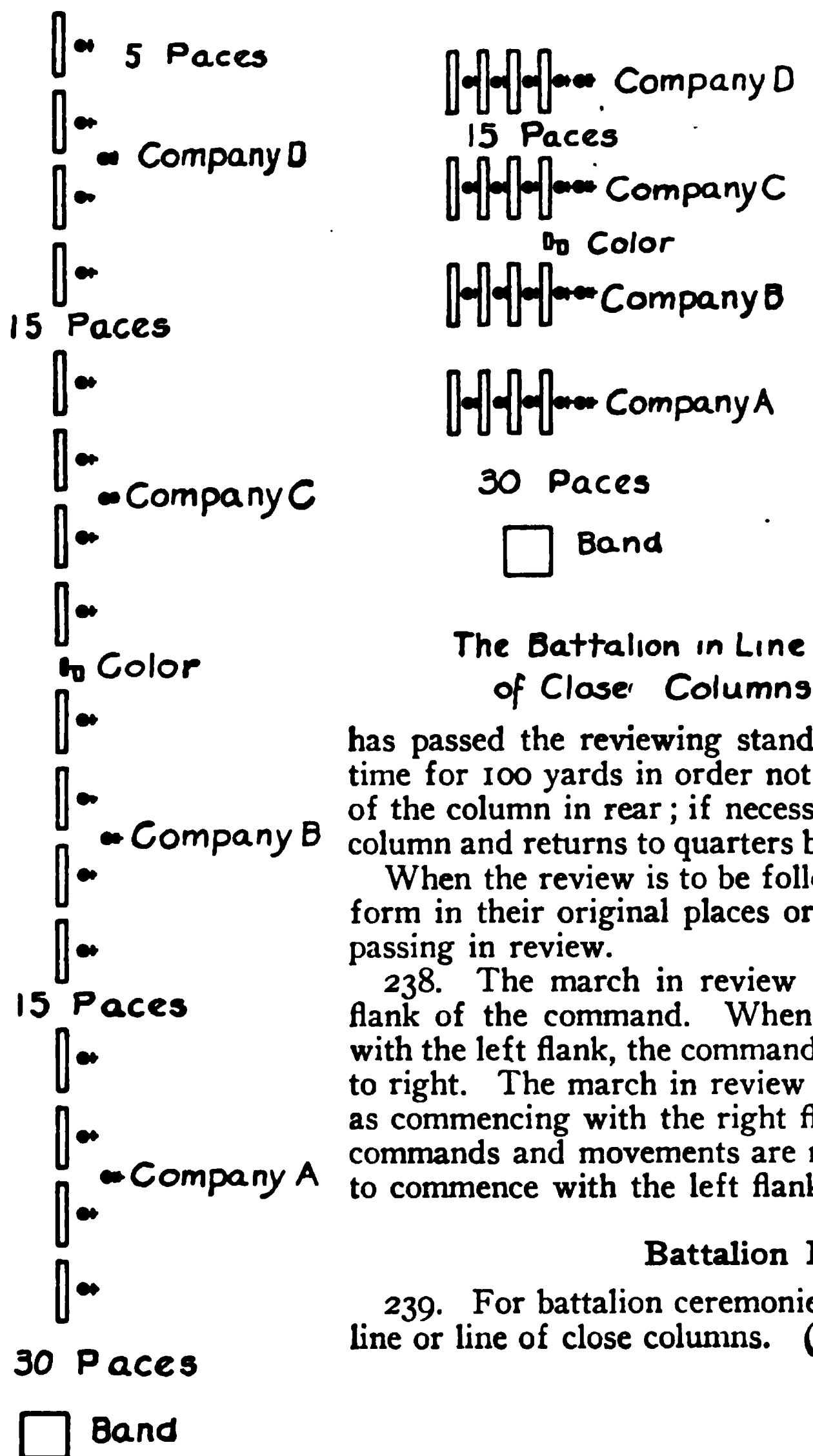
230. After saluting the reviewing officer in passing in review, the commanding officer of the troops turns out of the column and takes post on the side of the reviewing officer toward the direction of march of the command; the members of his staff accompanying him take post on the corresponding side of the reviewing officer's staff. When the rear element of his command has passed, the commanding officer of the troops, without changing his position, salutes the reviewing officer; he and the members of his staff accompanying him then rejoin the command. The commanding officer of the troops and the members of his staff are the only ones who turn out of the column and take post at the side of the reviewing officer.

231. When the rank of the reviewing officer entitles him to the honor, the regimental color salutes at the command *present arms*, given or repeated by the major of the battalion with which it is posted; and again in passing in review. This salute is given for all general officers and for the personages listed in Army Regulations.

232. The band of an organization plays while the reviewing officer is passing in front, and in rear, of the organization.

During the march in review, the band turns out of the column, takes post as hereinafter prescribed or as otherwise directed, continues to play until its organization has passed, then ceases playing and follows in rear of its organization.

233. If the rank of the reviewing officer (all general officers) entitles him to the honor, the band plays the prescribed national air or the field music sounds to



The Battalion
Line

PLATE 282.

the color, march, flourishes, or ruffles when arms are presented. When passing in review, at the moment the regimental color salutes, the musicians posted with the band sound to the color, march, flourishes, or ruffles.

234. The present arms and the ride around the line by the reviewing officer may be dispensed with.

235. Troops march in review with the guide toward the flank on which the reviewing officer is posted.

236. Troops pass in review in quick time only.

237. In reviews of regiments, each battalion and special unit after the rear

has passed the reviewing stand 50 paces, takes the double time for 100 yards in order not to interfere with the march of the column in rear; if necessary, it then turns out of the column and returns to quarters by the most practicable route.

When the review is to be followed by inspection, units reform in their original places or as otherwise directed after passing in review.

238. The march in review may commence from either flank of the command. When the march is to commence with the left flank, the command should be formed from left to right. The march in review is described in these lessons as commencing with the right flank, appropriate changes in commands and movements are made when the movement is to commence with the left flank.

Battalion Review.

239. For battalion ceremonies, the battalion is formed in line or line of close columns. (Plate 282.)

The adjutant posts himself so as to be six paces to the right of the right company, or leading platoon of the right company, when the battalion is formed, and faces in the direction in which the line is to extend. Adjutant's call is sounded; the band plays if present. As soon as the right company has been aligned, the adjutant takes post facing the battalion midway between the post of the major and the center of the battalion. (Plate 283.)

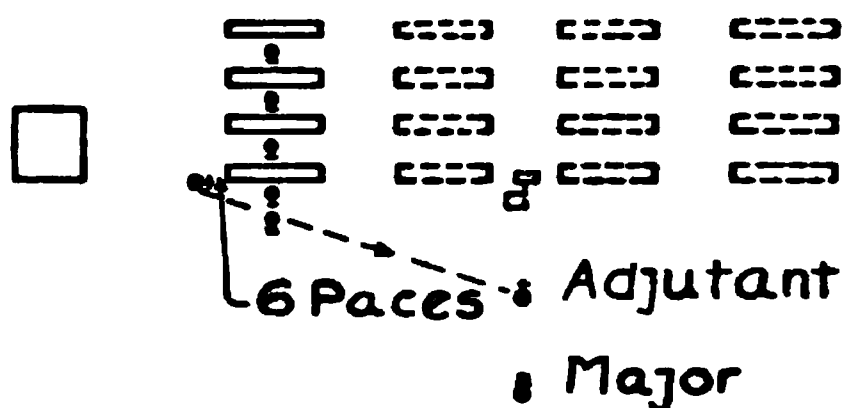


PLATE 283.

The companies, arriving from the rear, each in line or close column, as the case may be, are halted on the line successively from right to left in their proper order and places. Upon halting, each captain commands: 1. *Right*, 2. *DRESS*.

The band is posted by the adjutant so that it is 30 paces to the right of the right company. It ceases to play when the left company has been halted.

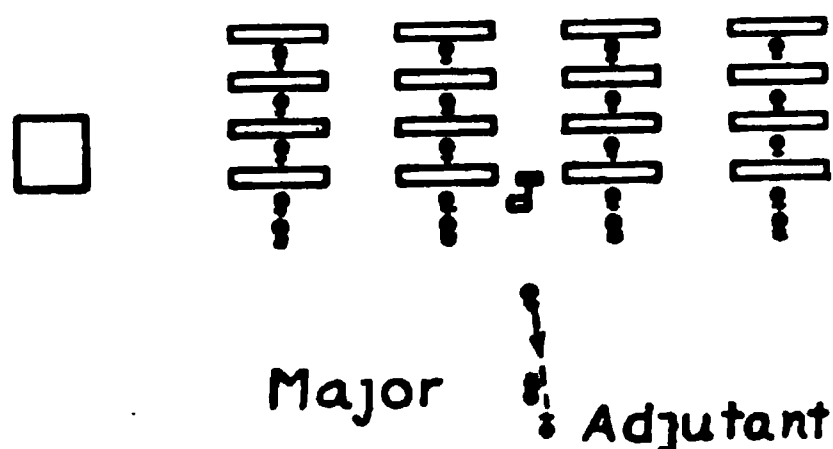


PLATE 284.

The major and those who accompany him take post.

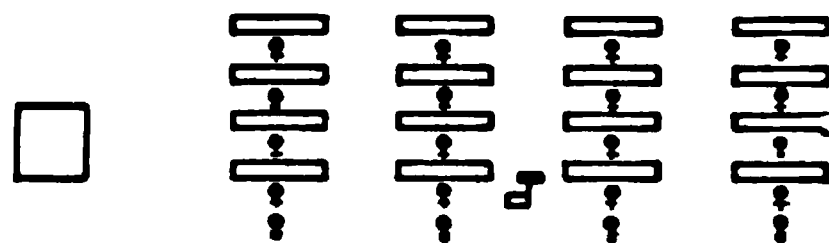
When all parts of the line have been dressed, and officers and all others have reached their posts, the adjutant commands: 1. *Present*, 2. *ARMS*. He then turns about and reports to the major: Sir, the battalion is formed; the major directs the adjutant, Take your post, Sir, and brings the battalion to the order. The adjutant takes his post, one pace to the right and three paces to the

rear of the major, passing to the right of the major. (Plate 284.)

The battalion having been formed, the major faces to the front; the reviewing officer moves a few paces toward the major and halts; the major turns about and commands: 1. *Present*, 2. *ARMS*, and again turns about and salutes.

The reviewing officer returns the salute; the major turns about, brings the battalion to order arms, and again turns to the front. (Plate 285.)

The reviewing officer approaches to about six paces from the major, the latter salutes, takes post on his right and accompanies him around the battalion. The band plays. The reviewing officer proceeds to the right of the band, passes in front of the captains to the left of the line and returns to the right, passing in rear of the file closers and the band.



Adjutant : Major

Reviewing
Officer

PLATE 285.

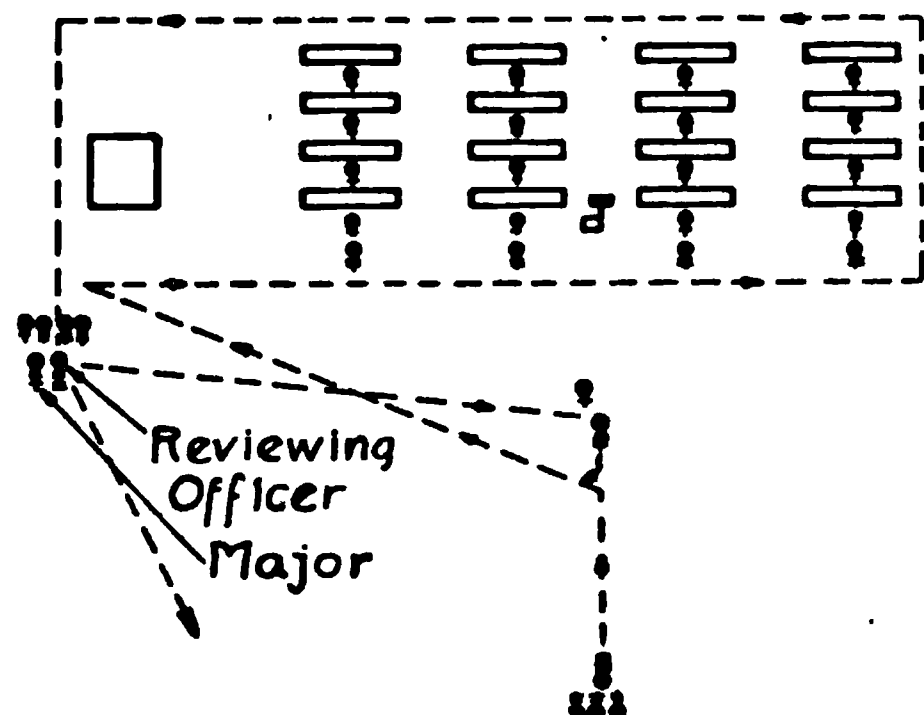
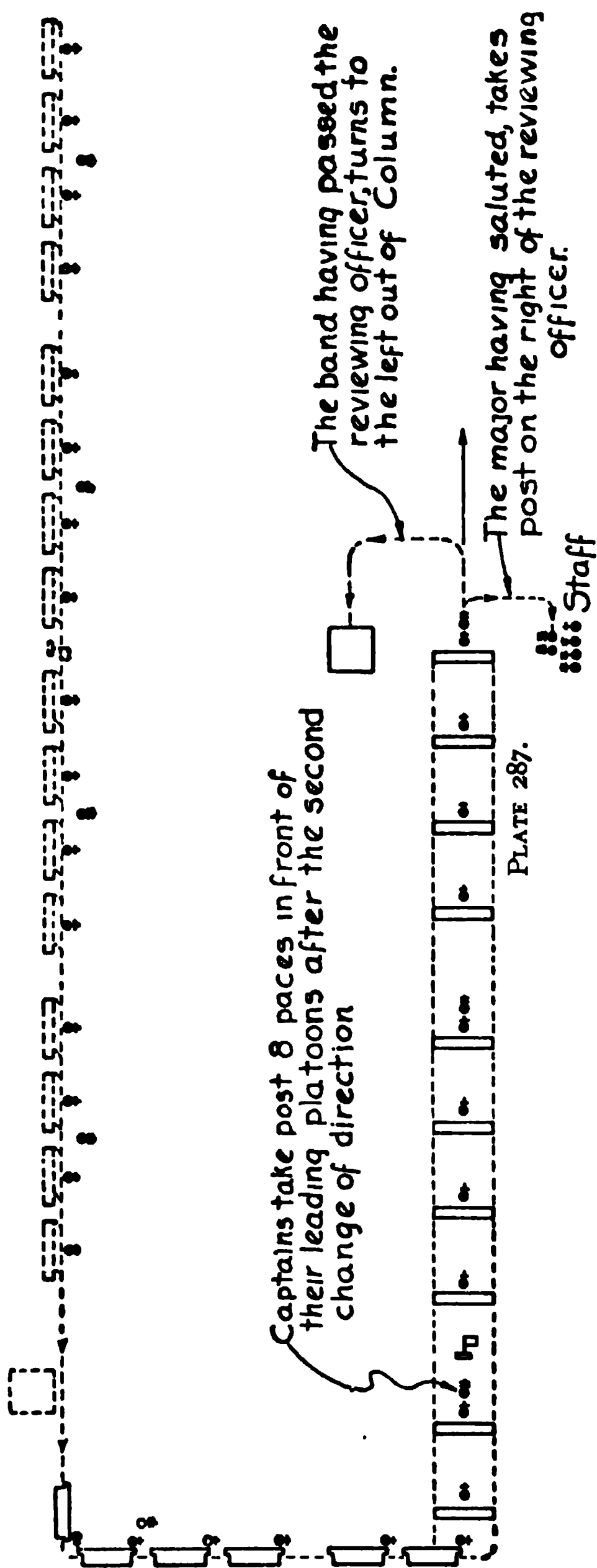


PLATE 286.

On arriving again at the right of the line, the major salutes and halts and the reviewing officer with his staff proceeds to his post in front of the center of the battalion. When the reviewing officer and his staff have passed him, the major moves directly to his post in front of the battalion, faces it, and commands: 1. *Pass in review*, 2. *MARCH*. (Plate 286.)



At the first command, the band changes direction, if necessary, and halts. Sufficient interval must be given between the preparatory command and the command of execution to permit the band to change direction.

The second command is given when the band has changed direction.

Being in line: At the major's first command, each captain commands: Squads right. At the major's second command, the band and the battalion move off, the band playing; without command from the major, the column changes direction at the points indicated by markers, and column of platoons at full distance is formed successively to the left at the second change of direction. Captains take post eight paces in front of their leading platoons after the second change of direction. (Plate 287.)

Being in line of close columns: At the major's first command, the captain of the right company commands: Squads right. At the major's second command, the band and the right company move off, the band playing; without command from the major, the band changes direction at the points indicated, and the company forms close column at the first change of direction and close line at the second change. The other companies successively execute squads right in time to follow the preceding company at 30 paces, form close column to the left, and pass in review in close line. (Plate 288.)

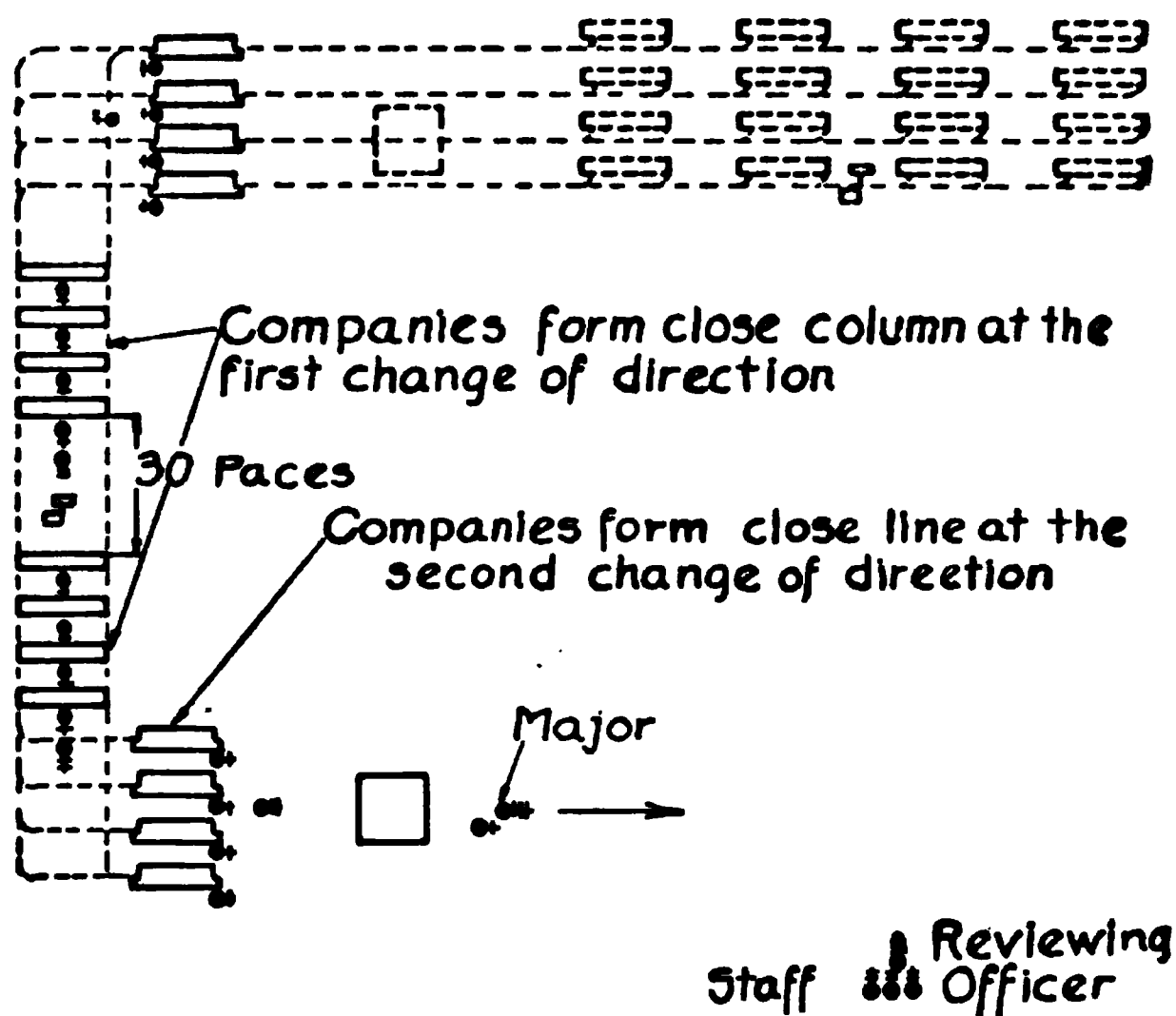


PLATE 288.

The major takes his post 15 paces in front of the band immediately after the second change of direction; the band having passed the reviewing officer, turns to the left out of the column, takes post in front of and facing the reviewing officer, and remains there until the review terminates.

The major and staff salute and execute eyes right when the major is six paces from the reviewing officer and terminate the salute when the major has passed six paces beyond him.

If passing in review in column of platoons, each captain and the second in command execute and terminate the salute in the same manner and when in the same relative positions with respect to the reviewing officer as prescribed for the major and his staff. Each platoon leader, without facing about, commands: 1. *Eyes*, in time to add, 2. *RIGHT*, when at six paces from the reviewing officer, and commands *FRONT* when six paces beyond him. He salutes at his command *RIGHT* and terminates his salute at his command *FRONT*.

If passing in review in close line all units of the company execute eyes right and front at the command of the captain; each captain commands: 1. *Eyes*, in time to add, 2. *RIGHT*, when at six paces from the reviewing officer, and *FRONT* when 20 paces beyond him.

Non-commissioned staff officers and the drum major execute and terminate the salute at the points prescribed for the major. Guides charged with the step, trace and direction, do not execute eyes right.

If the reviewing officer is entitled to a salute from the colors, the regimental color salutes when at six paces from him and is raised when six paces beyond him.

The major, having saluted, takes post on the right of the reviewing officer and remains there until the rear of the battalion has passed, then salutes, and rejoins his battalion.

The review terminates when the rear unit has passed the reviewing officer; the band then ceases to play and unless otherwise directed by the major, returns to the position it occupied before marching in review, or is dismissed; the major rejoins the battalion. The battalion then executes such movements as the reviewing officer may have directed, or is marched to its parade ground and dismissed.

At battalion review, the major and his staff may be dismounted at the discretion of the commanding officer.

Regimental Review.

240. For regimental ceremonies, the regiment is formed in line of masses. (Plate 289.)

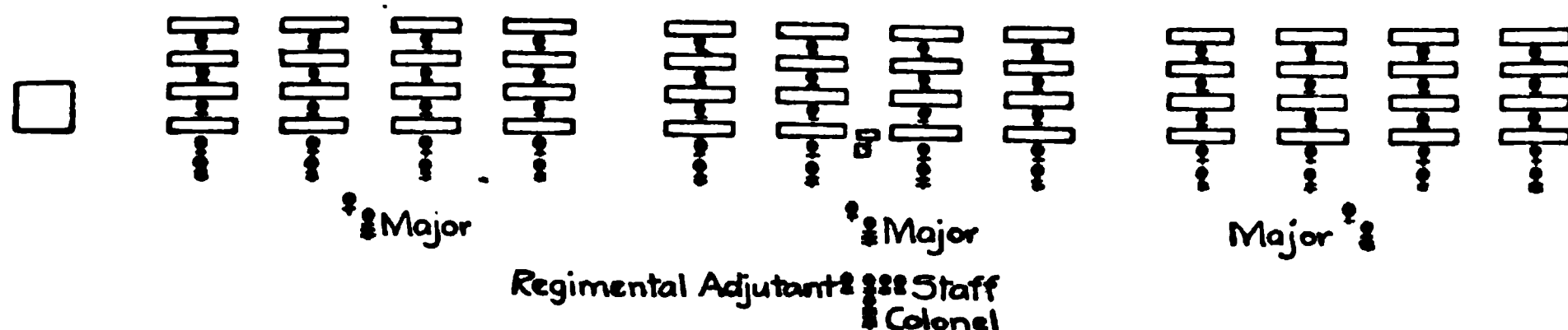


PLATE 289.—The Regiment in Line of Masses.

The adjutant places himself so as to be six paces to the right of the right company of the right battalion when the regiment is formed and faces in the direction in which the line is to extend. Adjutant's call is sounded; the band plays.

The adjutant indicates to the adjutant of the right battalion the point of rest and the direction in which the line is to extend, and then takes post facing the regiment midway between the post of the colonel and the center of the regiment. Each of the other battalion adjutants precedes his battalion to the line and marks its point of rest.

The battalions arriving from the rear, each in line of close columns are halted on the line successively from right to left in their proper order and places. Upon halting each major commands: 1. *Right*, 2. *DRESS*. The battalion adjutant assists in lining the battalion and then takes his post.

The band, arriving from the rear, takes its place in line when the right battalion has halted; it ceases playing when the left battalion has halted. The special units take their places in the line when the battalions in rear of which they are to be posted, have halted. (Plate 290.)

The colonel and those who accompany him take post.

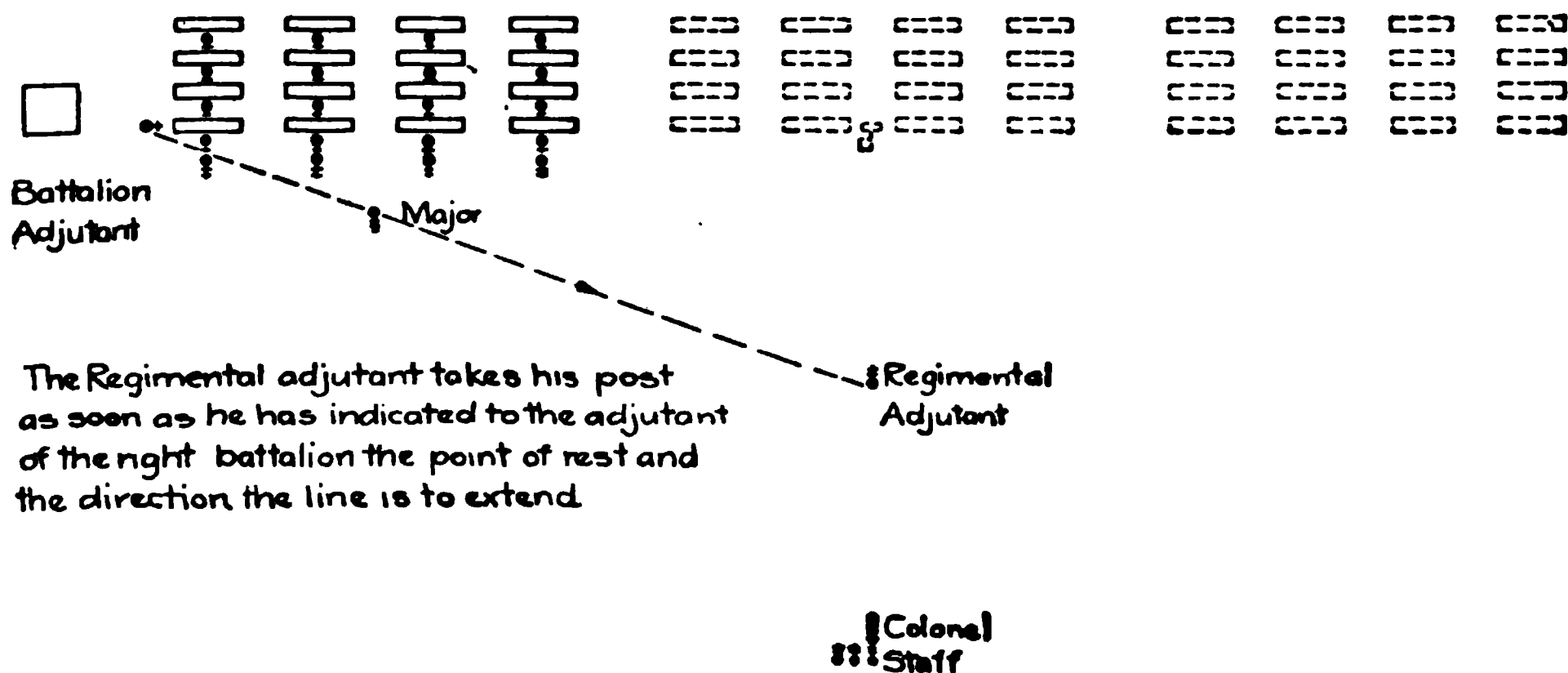


PLATE 290.

When all parts of the line have been dressed, and officers and all others have reached their posts, the adjutant commands: 1. *Present*, 2. ARMS. He then turns about and reports to the colonel: "Sir, the regiment is formed"; the colonel directs the adjutant: "Take your post, Sir," and brings the regiment to the order. The adjutant takes his post, one pace to the right and three paces to the rear of the colonel, passing to the right of the colonel.

The review proceeds as in the battalion, substituting "colonel" for "major" and regiment for battalion.

At the colonel's command: *Present arms*, the major of the center battalion commands: 1. *Present*, 2. ARMS. The other majors successively from the center bring their battalions to present arms. Order arms is similarly executed.

To march the regiment in review, the colonel commands, orders or signals: *Pass in review*. The major of the right battalion then commands: 1. *Column of close lines, first company squads right*, 2. MARCH. Other majors successively move their battalions by similar commands in time to follow the preceding battalions at 60 paces. The band and companies change direction without command from the majors and pass in review as prescribed for battalion review.

At the second change of direction each major takes post 15 paces in front of his leading company.

The review of a small body of troops, composed of different arms, is conducted on the principles laid down for the regiment. The troops of each arm are formed and marched so as to conform as nearly as practicable to the movement of the infantry.

PARADES.

General Rules.

241. If dismounted, the officer receiving the parade and his staff stand at parade rest, with arms folded, while the band is sounding off; they resume attention with the adjutant. If mounted, they remain at attention.

242. The band is sounding off when it marches from its position on the right of the battalion along the front of the line of captains to the left of the battalion and returns to its original position. The band plays throughout its march.

It may sometimes be directed by the adjutant to sound off in place. When so directed it plays without moving from its position on the right of the battalion. In either case the battalion is always brought to parade rest before sound off is given.

243. In assuming the position of parade rest with the arms folded do not hold your arms in a constrained position but let them rest on the chest. The right forearm should be over the left. Take up this position with the first note of the band and resume the position of attention with the adjutant.

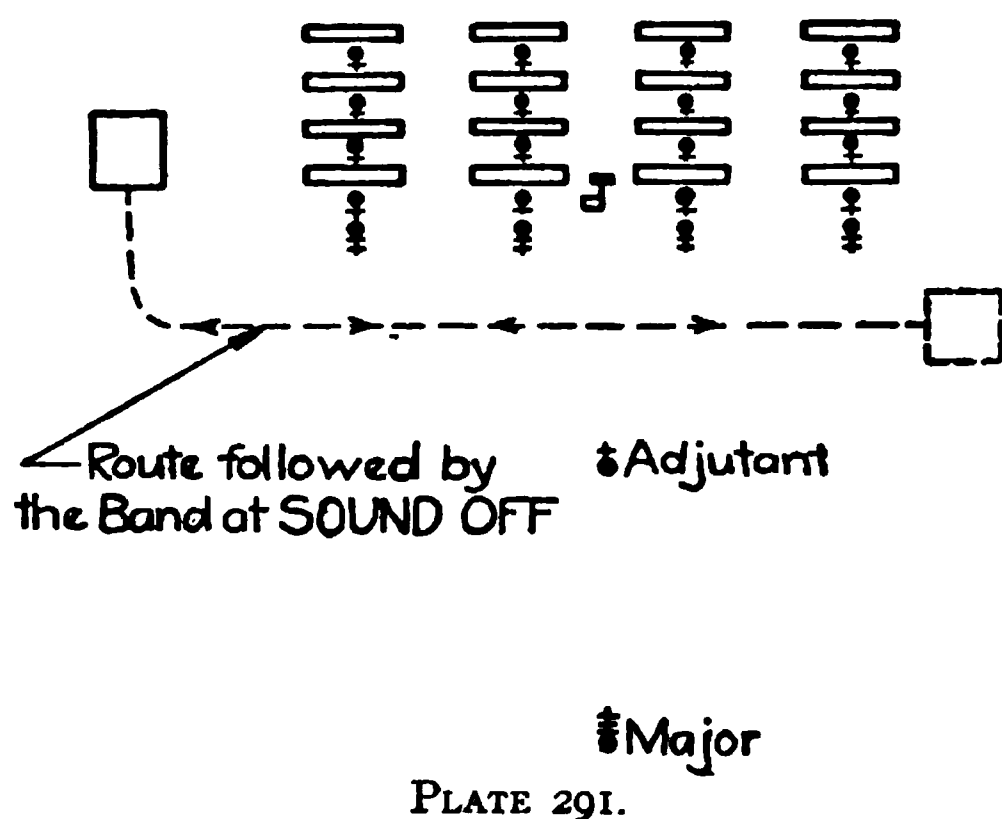
244. At the command *report*, given by the battalion adjutant, the captains in succession from the right salute and report: A (or other) company, present or accounted for; or A (or other) company (so many) officers or men absent.

The salute is made with the saber if so armed. If armed with a pistol the salute should be made with the hand. In either case maintain your salute until the report has been acknowledged by the adjutant.

Battalion Parade.

245. At adjutant's call, the battalion is formed in line or line of close columns as described in the Battalion Review, but is not presented. The major takes post at a convenient distance in front of the center and facing the battalion.

The adjutant, from his post in front of the center of the battalion, commands: 1. *Parade*, 2. REST; the battalion executes parade rest. The adjutant directs the band: SOUND OFF.



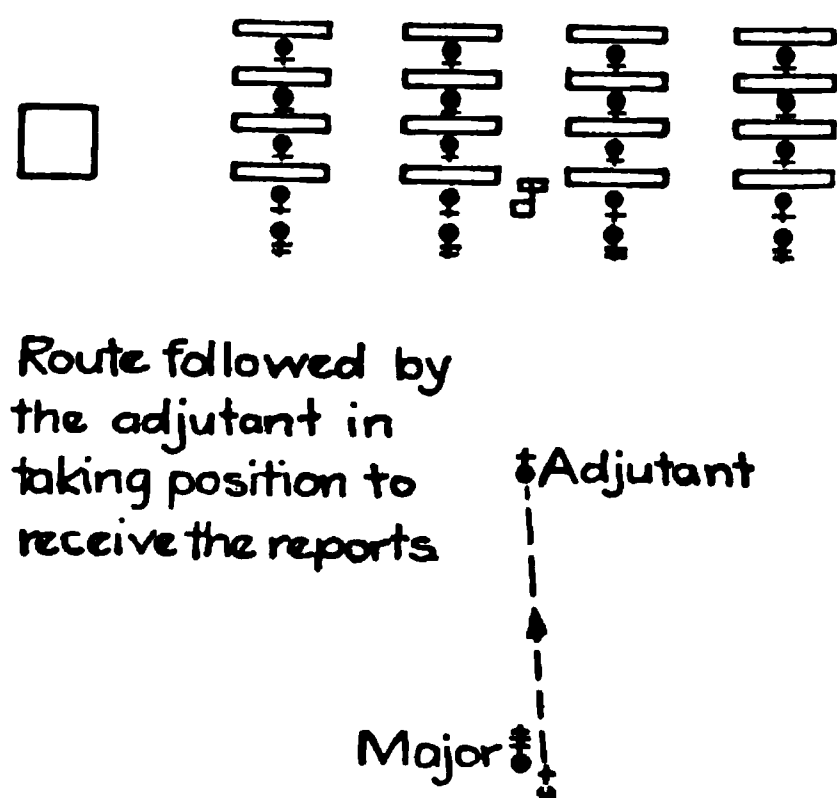
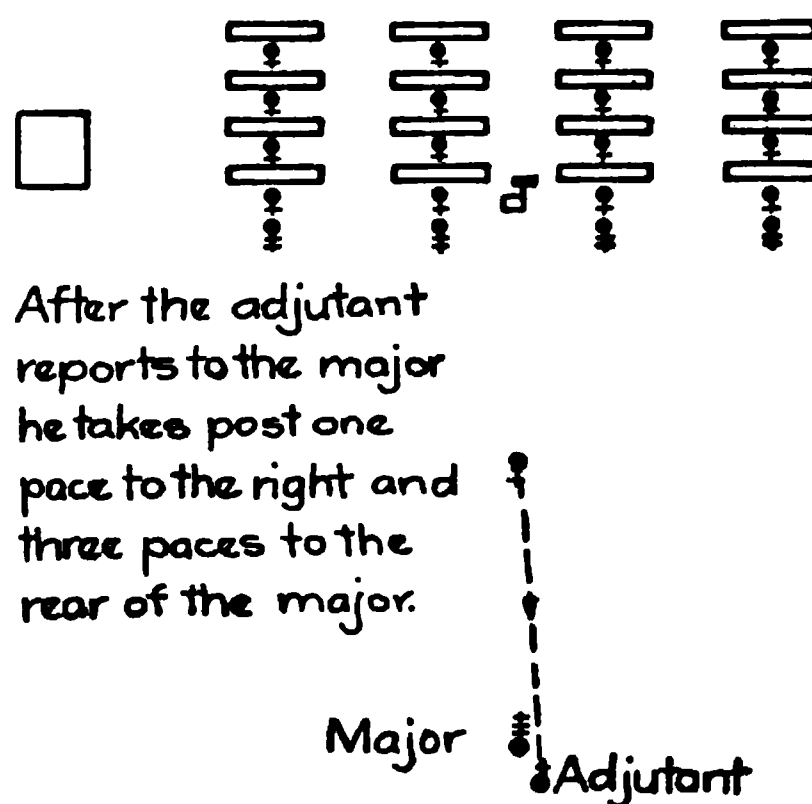
The band, playing in quick time, passes in front of the line of captains to the left of the line and back to its post on the right, when it ceases playing. At evening parade, when the band ceases playing, retreat is sounded by the field music, and following the last note and while the flag is being lowered, the band plays the Star Spangled Banner. (Plate 291.)

Just before the last note of retreat, the adjutant comes to attention, and as the last note ends, commands: 1. *Battalion*, 2. ATTENTION, 3. *Present*, 4. ARMS and salutes retaining that position until the last note of the

National Anthem. He then turns about, salutes and reports: *Sir, the parade is formed.* The major directs the adjutant: *Take your post, Sir.* The adjutant moves at a trot (if dismounted, in quick time) passes by the major's right, and takes his post, one pace to the right and three paces to the rear of the major. (Plate 292.)

The major commands: 1. *Order*, 2. ARMS, and adds such exercises in the manual of arms as he may desire. Officers, non-commissioned officers commanding platoons or armed with the saber, and the color guard, having once executed order arms, remain in that position during the exercises in the manual.

The major then directs the adjutant: Receive the reports, Sir. The adjutant pass-



ing by the major's right, advances at a trot (if dismounted, in quick time) toward the center of the line, halts midway between it and the major and commands: REPORT. The captains will report their companies as described under the general rules. (Plate 293.)

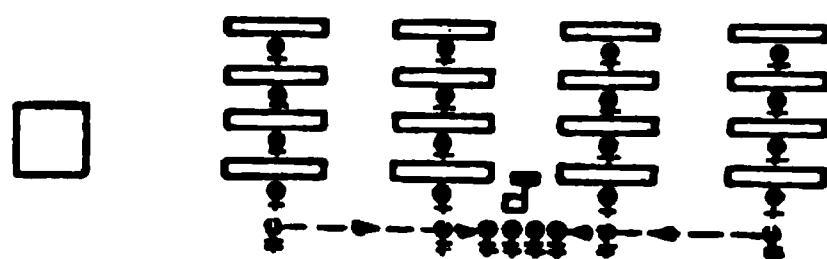
The reports received, the adjutant turns about, and reports: Sir, all are present or accounted for; or Sir (so many), officers or men are absent, including in the list of absentees those from the band and field music reported to him by the drum major prior to the parade.

The major directs: Publish the orders, Sir.

The adjutant turns about and commands: "Attention to orders"; he then reads the orders and commands: 1. *Officers*, 2. *CENTER*, 3. *MARCH*.

At the command *center* captains face to the center. At the command *march*, they close to the center and face to the front; the adjutant then turns about and takes his post. (Plate 294.)

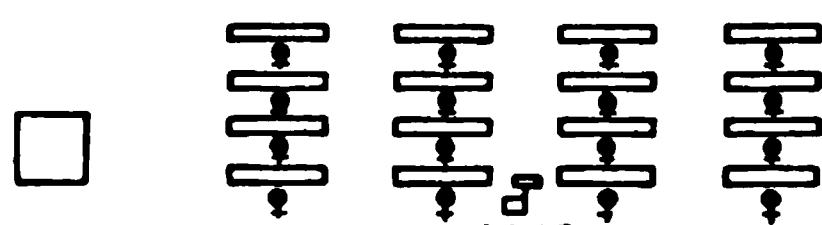
The captains, having closed and faced to the front, the senior commands: 1. *Forward*, 2. *MARCH*. The captains advance, the band playing; the senior captain is the



The adjutant commands 1. *Officers*, 2. *CENTER*, 3. *MARCH*, then turns about and takes his post.

Major Adjutant

PLATE 294.



The captains under command of the senior march forward and are halted 6 paces from the major.

Major Adjutant

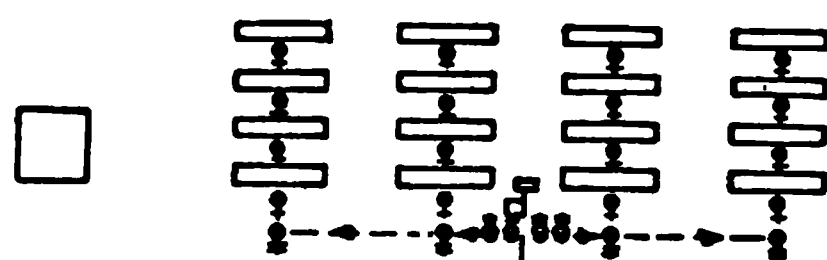
PLATE 295.

guide, and marches on the major; the captains are halted at six paces from the major by the senior who commands: 1. *Officers*, 2. *HALT*. They halt and salute. In order that the salutes may be given together, the halt should be executed in two counts and the salute rendered on the third count. The salute is maintained until it is acknowledged by the major. The sabers are brought to the carry or the hands dropped to the side with the major. The major then gives such instructions as he deems necessary, the band continues to play while these instructions are being given, and commands: 1. *Officers*, 2. *POSTS*, 3. *MARCH*. (Plate 295.)

At the command *posts*, captains face about.

At the command *march*, they step off with the guide as before, and the senior commands: 1. *Officers*, 2. *HALT*, so as to halt eight paces from the line; he then adds: 1. *POSTS*, 2. *MARCH*.

At the command *posts*, captains face outward, and at the command *march*, step off in succession at four paces distance, and resume their posts. (Plate 296.)



Route followed by the captains in returning to their posts.

Major Adjutant

PLATE 296.

The music ceases when the captains have resumed their posts.

The major then commands: 1. *Pass in review*, 2. MARCH.

The battalion marches according to the commands and principles of review; when the last company has passed, the ceremony is concluded.

The band continues to play while the companies are in march upon the parade ground. After passing in review, companies are marched to their respective parades by their captains.

When the captains have saluted the major, he may direct them to form line with staff, in which case they move individually to the front, passing to the right and left of the major and staff, halt on the line established by the staff, face about, and stand at attention. The music ceases when the captains join the staff. The major causes the companies to pass in review under the command of the seconds in command by the same commands as before.

Regimental Parade.

246. The regiment is formed in line of masses as described under Regimental Reviews.

The parade proceeds as for the battalion with the following exceptions:

"Colonel" is substituted for "major," "regiment" for "battalion" in the description and "battalions" for "battalion" in the commands.

The battalions execute present arms, order arms, parade rest, and come to attention at the command of execution of their commanders (majors) successively from the center battalion.

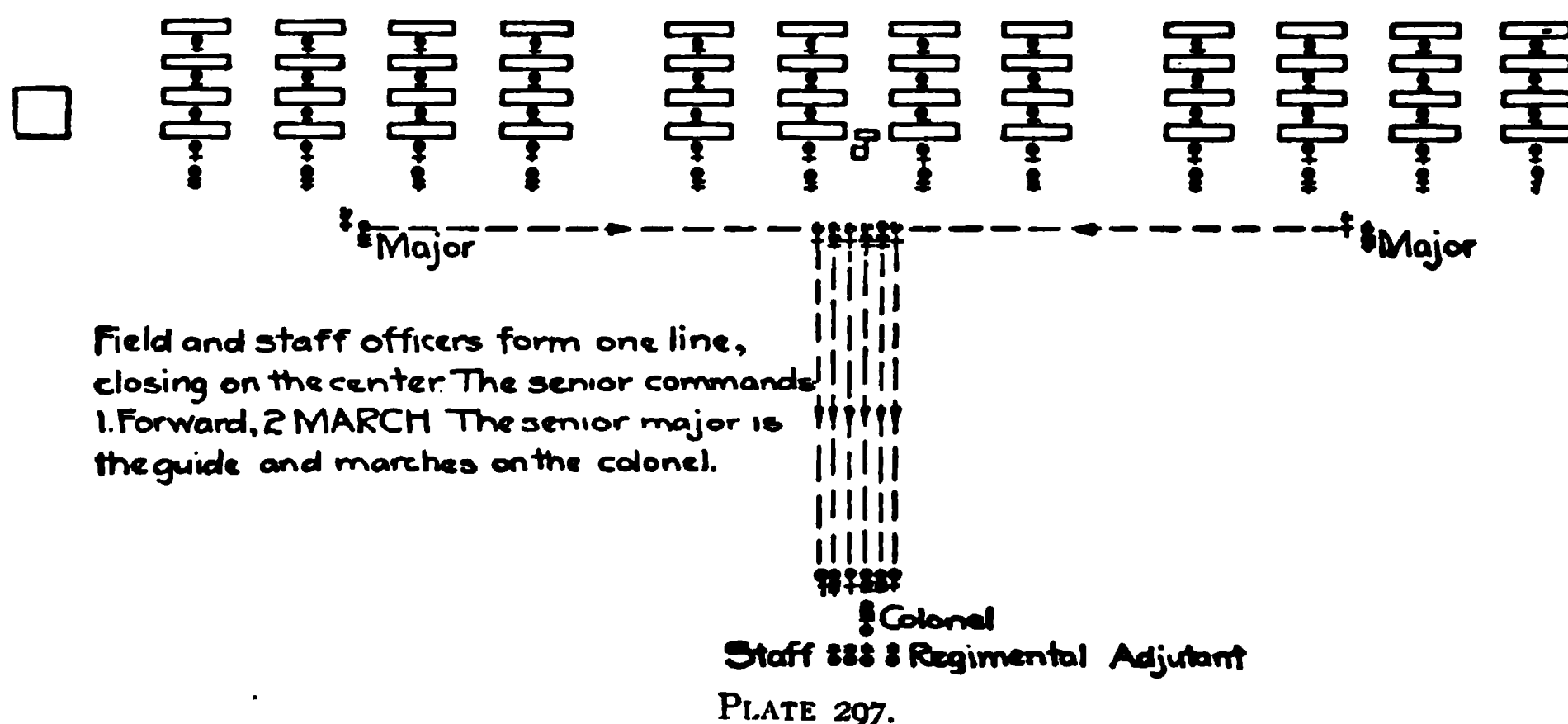
Great care must be exercised to see that the members of the companies do not execute any movement at the command of the colonel. They must wait for the major's command.

Exercises in the manual of arms and reports are omitted.

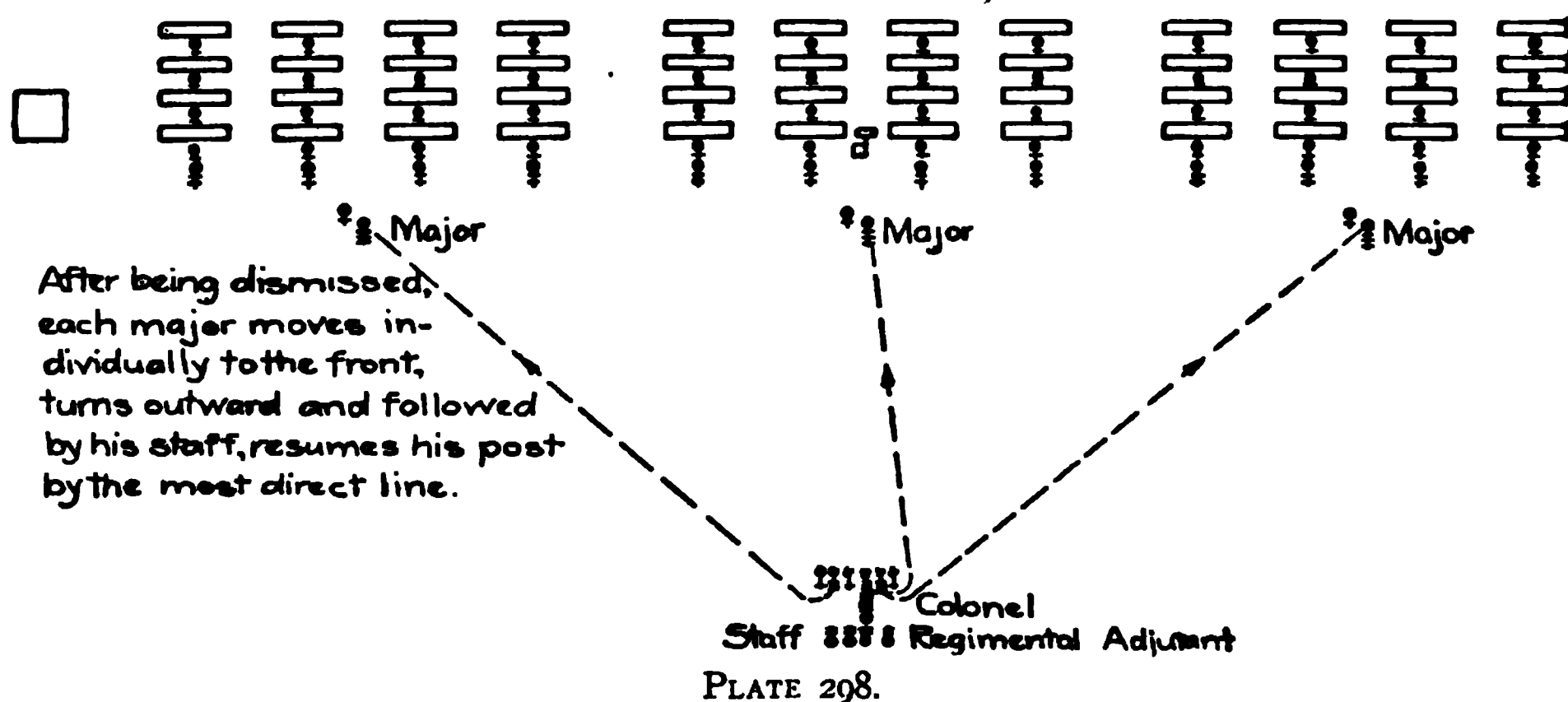
After publishing the orders, the adjutant commands: 1. *Officers center*, 2. MARCH.

Company commanders remain at their posts with their companies.

The field and staff officers form one line, closing on the center. The senior commands. 1. *Forward*, 2. MARCH. The senior major is the guide and marches on the colonel. (Plate 297.)



After being dismissed, each major moves individually to the front, turns outward and followed by his staff, resumes his post by the most direct line. (Plate 298.)



The colonel gives the necessary commands, orders, or signals for marching the regiment in review. The regiment marches according to the principles of review.

Escort of the Color.

247. The regiment being in line of masses, the colonel details a company, other than the color company, to receive and escort the national color to its place. During the ceremony, the regimental color remains with the color guard at its post with the regiment.

The band moves straight to its front until clear of the line of field officers, changes direction to the right, and is halted; the designated company, moving to the front from its position in line, forms column of platoons in rear of the band, the color bearer in the line of file closers of the center platoon. (Plate 299.)

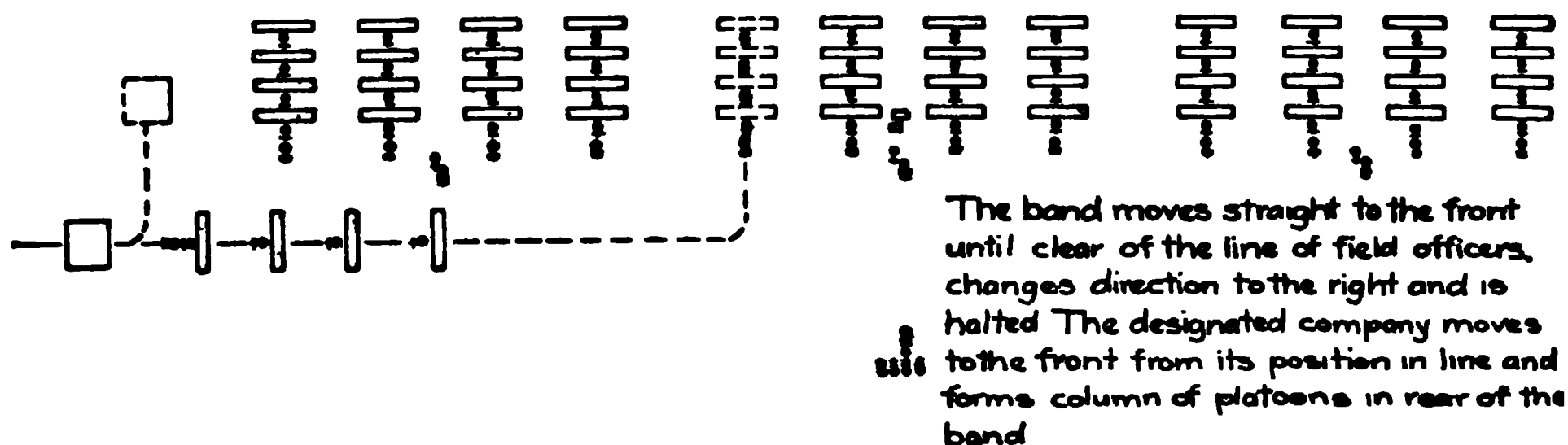


PLATE 299.

Colonel's Office

The escort then marches without music to the colonel's office or quarters, and is formed in line facing the entrance, the band on the right. (Plate 300.)

The color bearer, preceded by the senior first lieutenant and followed by sergeant of the escort, then goes to obtain the color.

The escort then marches without music to the colonel's office or quarters, and is formed in line facing the entrance, the band on the right.

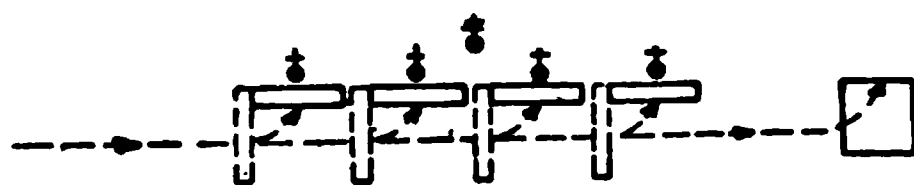
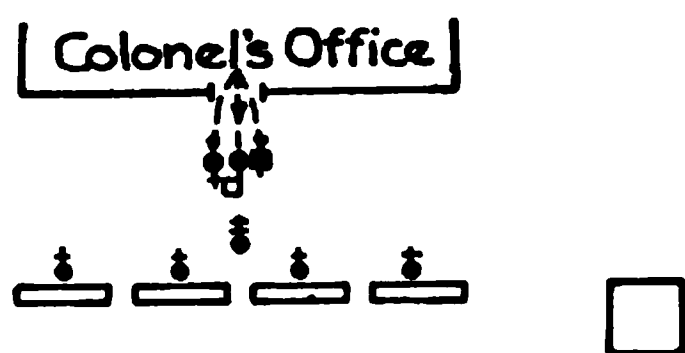


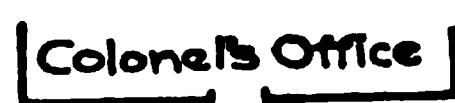
PLATE 300.



When the color bearer comes out, followed by the lieutenant and sergeant, he halts before the entrance, facing the escort. The lieutenant places himself on the right, the sergeant on the left of the color bearer.

PLATE 301.

When the color bearer comes out, followed by the lieutenant and sergeant, he halts before the entrance, facing the escort; the lieutenant places himself on the right, the sergeant on the left of the color bearer; the escort presents arms, and the field music sounds to the color; the first lieutenant and the sergeant salute. (Plate 301.)

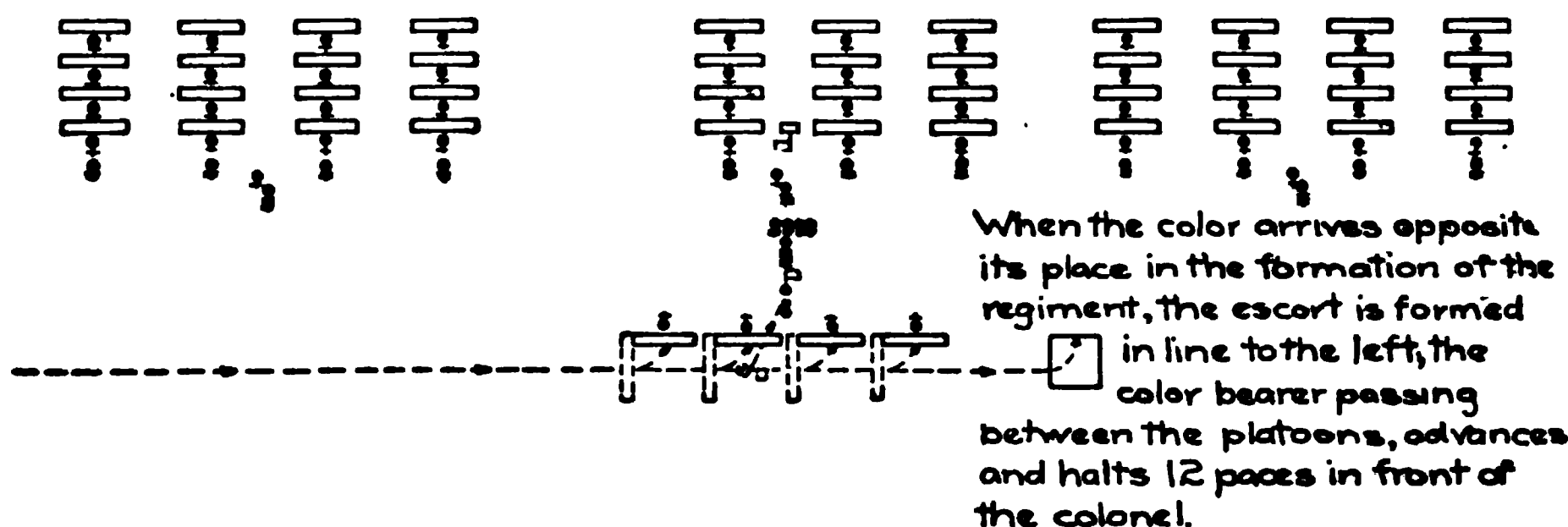


Arms are brought to the order; the lieutenant and the sergeant return to their posts; the company is formed in column of platoons, the band taking post in front of the column; the color bearer places himself in the center of the interval in rear of the center platoon; the escort marches in quick time, with guide left, back to the regiment, the band playing. (Plate 302.)

The company is formed in column of platoons, the band taking post in front of the column; the color bearer places himself in the center of the interval in rear of the center platoon.

PLATE 302.

The march is so conducted that the escort arrives at 50 paces in front of the right of the regiment, marching parallel to its front; when the color arrives opposite its place in the formation of the regiment, the escort is formed in line to the left; the color bearer, passing between the platoons, advances and halts 12 paces in front of the colonel. (Plate 303.)



When the color arrives opposite its place in the formation of the regiment, the escort is formed in line to the left, the color bearer passing between the platoons, advances and halts 12 paces in front of the colonel.

PLATE 303.

The color bearer having halted, the colonel, who has taken post 30 paces in front of the center of his regiment, faces about, commands: *Present arms*, faces to the front, and salutes; the field music sounds to the color.

The colonel then faces about and brings the regiment to the order; the color bearer then takes his post with the color company.

The escort presents arms and comes to the order with the regiment at the command of the colonel, after which the captain forms it again in column of platoons,

and preceded by the band, marches it to its place, passing around the left flank of the regiment.

The band plays until the escort passes the left of the line, when it ceases playing and returns to its post on the right, passing in rear of the regiment. (Plate 304.)

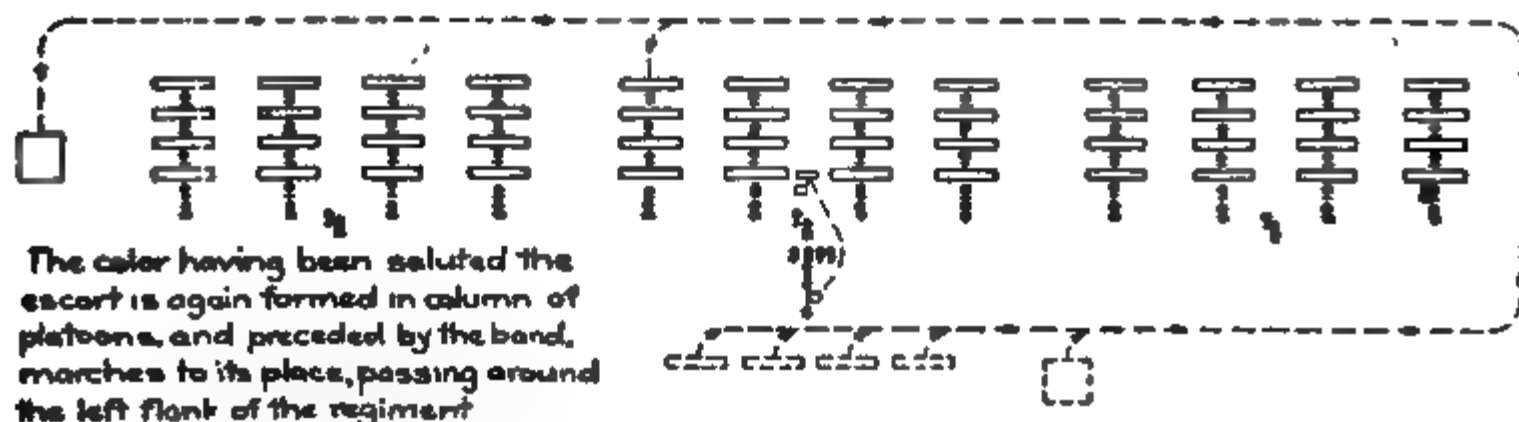


PLATE 304.

The regiment may be brought to rest when the escort passes the left of the line. Escort of the color is executed by a battalion according to the same principles.

INSPECTIONS.

Company Inspections.

248. The company being in column of platoons at full distance the captain commands: 1. *Prepare for inspection*, 2. MARCH.

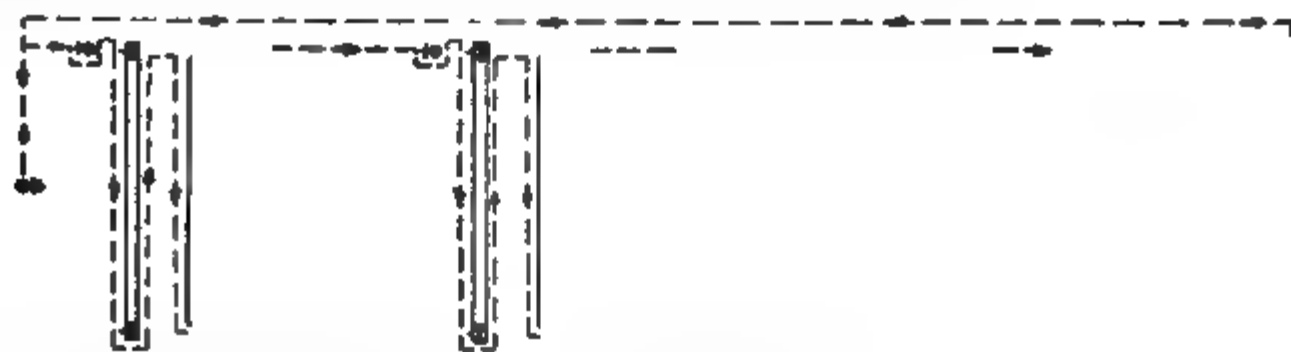
At the first command, each platoon leader commands: Open ranks.

At the command *march* the front rank of each platoon executes right dress; the rear rank and the file closers march backward four steps, halt and execute right dress.

Each platoon leader aligns the front rank, rear rank, and file closers of his platoon, takes post three paces in front of the right guide, facing to the left and commands: FRONT, and faces to the front.

The captain then commands: REST, and commencing at the head of the column makes a minute inspection of the arms, accoutrements, dress and ammunition of the personnel of the several platoons and company headquarters. As he approaches each platoon, its leader faces to the left and commands: 1. *Platoon*, 2. ATTENTION, 3. PREPARE FOR INSPECTION, and faces to the front; as soon as inspected, he accompanies the captain, keeping on his right.

The inspection is from right to left in front and from left to right in rear of each rank and of the line of file closers. (Plate 305.)



After the ranks have been opened, the platoons dressed, and each platoon leader has taken his post 3 paces in front of the right guide, the captain commands: REST, and commencing at the head of the column makes his inspection. The dotted line shows the route followed by the captain in making his inspection.

PLATE 305



Each man as the captain approaches him executes inspection arms. (Plate 306.)

PLATE 306.

The captain takes the piece, grasping it with his right hand just above the rear sight (Plate 307), the man dropping his hands as soon as the captain grasps his piece. (Plate 308.)

PLATE 307.

PLATE 308.

The captain inspects the piece and with the hand and piece in the same position as in receiving it, hands it back to the man who takes it with his left hand at the balance and executes order arms. (Plate 309.)

PLATE 309.

Men successively execute inspection arms, as the inspecting officer returns the piece to the man on their right.

Should the piece be inspected without handling, each man executes order arms as soon as the captain passes to the next man.

Enlisted men armed with the pistol execute inspection pistol by drawing the pistol from the holster and holding it diagonally across the body, barrel up, and 6 inches in front of the neck, muzzle pointing up, and to the left. The pistol is returned to the holster as soon as the captain passes.

Upon the completion of the inspection of each platoon, its leader takes post facing to the left, three paces in front of the right guide, and commands: 1. *Close ranks*, 2. MARCH, and adds rest after the ranks have been closed.

At the command MARCH, the rear rank closes to 40 inches, each man covering his file leader; the file closers close to two paces from the rear rank. The platoon leader then resumes his post in front of the center of the platoon.

The company may be inspected in line according to similar principles.

249. If the company is dismissed, rifles are put away. In quarters, head dress and accoutrements are removed, and the men stand near their respective bunks; in camp, they stand covered but without accoutrements, in front of their tents, during the inspection of quarters or tents.

If the personal field equipment has not been inspected in ranks and its inspection in quarters or camp is ordered, each man arranges the prescribed articles, on his bunk if in quarters or permanent camp, or in front of his half of the shelter tent if in shelter tent camp.

The captain, accompanied by the platoon leaders, then inspects the quarters or camp. The first sergeant precedes the captain and calls the men to attention on entering each squad room or on approaching the tents; the men stand at attention but do not salute.

250. If the inspection is to include an examination of the equipment while in ranks, the captain, after the inspection of arms has been completed, causes the platoons to stack arms, march backward four paces in rear of the stacks, and take intervals. He then commands: 1. UNSLING EQUIPMENT, 2. OPEN PACKS.

At the first command, each man unslings his equipment and places it on the ground at his feet, haversack to the front, the pack 1 foot in front of toes.

At the second command, pack carriers are unstrapped, packs removed and unrolled, the longer edge of the pack along the lower edge of the cartridge belt. Each man exposes shelter tent pins and pole, removes meat can, knife, fork and spoon from the meat can pouch and places them on the right of the haversack, knife, fork and spoon in the open meat can; removes the canteen and cup from the cover and places them on the left side of the haversack; unstraps and spreads out the haversack so as to expose its contents; folds up the carrier so as to uncover the cartridge pockets; opens the pockets; unrolls toilet articles and places them on the outer flap of the haversack; places underwear carried in pack on the left half of the open pack, with round fold parallel to front edge of pack; opens first aid pouch and exposes contents to view. Special articles carried by individual men such as flag kit, field glasses, compass, steel tape, note book, etc., are arranged on the right half of the open pack. Each man then resumes the attention.

Shelter tents may be pitched and equipment displayed as described under Infantry Equipment, if so directed by the inspecting officer.

The captain then passes along the ranks and file closers as before, inspects the equipment, returns to his position in front of the center of the leading platoon and commands: CLOSE PACKS.

Each man rolls up his toilet articles and underwear, straps up his haversack and its contents, replaces the meat can, knife, fork and spoon and the canteen and cup; closes cartridge pockets and first-aid pouch; restores special articles to their proper receptacles; rolls up and replaces pack in carrier; and leaving the equipment in position on the ground, resumes the attention.

All equipments being packed, the captain commands: **SLING EQUIPMENT.**

The equipments are slung and belts fastened.

The captain then causes the platoons to assemble and take arms. The inspection is completed as already explained.

251. The non-commissioned officer or private in charge of company headquarters prepares the detachment for inspection as prescribed for platoon leaders, posting his detachment at ten paces from the rear platoon before opening ranks.

252. The captain may direct the platoon leaders to make the detailed inspection of the arms, equipment, etc., of the men of their platoons.

The second in command accompanies the captain throughout the inspection or makes such part of the inspection as the captain may direct.

253. Should the inspector be other than the captain, the latter, after commanding **REST**, faces to the front. When the inspector approaches, the captain faces about, brings the company to attention, faces to the front, and salutes. As soon as inspected, he faces about, commands: **REST**, and accompanies the inspector. The inspection proceeds as before.

Battalion Inspection.

254. If the formation is to include both inspection and review, the inspection may either precede or follow the review.

The battalion is formed in line of close columns, all officers dismounted. The major causes the companies to extend to full distance; the band, non-commissioned staff and colors conform to the movements of the companies.

The major commands: 1. *Prepare for inspection*, 2. **MARCH.**

At the first command, each captain commands: **Open ranks.**

At the command **MARCH**, ranks are opened in each company as in the inspection of the company.

Buglers join their companies.

The band opens ranks.

The inspector inspects the major, and accompanied by the latter inspects the staff officers.

The major then commands: **REST**, and with his staff, accompanies the inspector.

If the major is the inspector, he commands: **REST**, and inspects his staff, which then accompanies him.

The inspector, commencing at a flank of the battalion, then makes an inspection of arms, accoutrements, dress and ammunition of each soldier of the band, of the several companies, the color guard, and the non-commissioned staff.

The adjutant gives the necessary commands for the inspection of the band, the color guard and the non-commissioned staff.

When the inspector approaches the band, the adjutant commands: **PREPARE FOR INSPECTION.**

As the inspector approaches him, each man raises his instrument in front of the body, reverses it so as to show both sides, and then returns it. Buglers execute inspection similarly.

The band plays during the inspection of the companies.

As the inspector approaches each company, its captain commands: 1. *Company*, 2. **ATTENTION**, and faces to the front; as soon as inspected, he faces about, commands: **REST**, and accompanies the inspector. The inspection proceeds as in company inspection. At the completion of the inspection of the non-commissioned staff and each company, the major directs their dismissal, unless otherwise directed by the inspector.

255. If the inspection will probably last a long time, the companies not under inspection may be permitted to stack arms and fall out; as the inspection of the preceding company nears completion, they fall in and take arms.

256. At the inspection of quarters or camp, the inspector is accompanied by the captain, followed by the other officers or by such of them as he may designate. The inspection is conducted as described in company inspection.

Regimental Inspection.

257. The commands, means and principles are the same as described for a battalion.

The regiment is formed in line of masses or such other suitable formation as required by the ground and the space available.

Before opening ranks, companies are extended to full distance.

On the approach of the inspector, each major brings his battalion to attention. Battalion inspection follows. Inspection of special units follows that of the battalions.

HINTS TO DRILL INSTRUCTORS.

THE REGULATIONS ARE SOUND.

After every great war there is a tendency on the part of persons of limited experience to discredit the accumulated experience of centuries of military training, and to declare all former principles and methods obsolete. Such ideas are not only false, but also dangerous.

The development of the art of war is evolutionary, not revolutionary. Man has been making war ever since his first appearance upon earth. The principles of strategy and tactics as we now know them have been gradually evolved from this experience. Weapons also have gradually developed. The World War was fought principally with weapons already known and highly perfected. Some of them were improved during the course of the conflict. Certain new devices, such as the tank, were introduced, and some old weapons were revived, such as grenades and poison gas.

The principles of strategy and tactics, based on long and painful experience, are basically sound. They cannot be upset by any single war, however great its magnitude, or however long its duration. Improvements in weapons and corresponding slight changes in tactical methods result from every war of importance. But if the late war proved anything it proved the truth of the old maxims, and the value of discipline and drill.

Our present regulations are based upon our latest experiences in the World War, as well as upon all previous experiences. They have stood the test of time and have proven sound. The importance which they attach to discipline, precision and thoroughness, are based upon thousands of years of experience in training men for war. Therefore, let us have confidence in and closely study the regulations.

THE DRILL SCHEDULE.

A drill schedule may be merely a scrap of paper prepared especially for exhibit to an inspector or superior officer. Or it may and should be a practical, workable program, and a vital factor in the proper training of an organization. The drill manual itself does not constitute such a schedule, though it is the basis for it.

Officers and men will derive from a schedule no more than the commander has put into it. The latter should therefore realize that a grave responsibility rests upon him in the preparation of his schedule. All his mental resources and enthusiasm should be devoted to making it interesting, instructive and progressive. And having prepared the schedule his energies should be further devoted to seeing that each unit and each subordinate carries out the schedule in the spirit in which it has been prepared. The best schedule may fail of its purpose unless the commander exacts of his subordinates a full and intelligent compliance with its provisions.

A copy of the schedule should be furnished to each officer, if practicable, and it should be posted on the bulletin board of each unit where the non-commissioned officers may consult it in preparation for the drills.

The schedule should contain references to paragraphs of the I. D. R. Simplified and Illustrated, as this will facilitate its use.

Officers Should Be Efficient Drill Instructors.

In time of peace the training of troops is the most important duty of all officers and non-commissioned officers of the combatant forces. Even in time of war this duty does not cease, and is second in importance only to leading troops in combat. Accordingly every officer and non-commissioned officer should take pride in being known as an efficient drill instructor from the beginning of his career.

Enlisted men form their impressions of their officers chiefly on the drill ground. If the officer knows the drill regulations thoroughly and knows how to impart his knowledge to his men, he will soon acquire a reputation for efficiency and will gain the respect and confidence of those under him.

The fundamentals of discipline and training are taught to the recruit in the school of the soldier and of the squad, in the drill regulations. The hints herein are accordingly as important to non-commissioned officers as to officers.

QUALIFICATIONS OF A GOOD DRILL INSTRUCTOR.

The necessary qualifications of a good drill instructor, which should be cultivated by all officers and non-commissioned officers, are:

- a. A thorough knowledge of the drill, in all its details.
- b. Ability to impart this knowledge by proper methods of instruction.
- c. A soldierly bearing which will serve as an example to the men under instruction.
- d. Energy, perseverance and enthusiasm.
- e. Patience and good manners.

THOROUGH KNOWLEDGE OF THE DRILL.

Knowledge is the first essential, and one who aims to become a good drill instructor must *study, study, and continue to study* constantly.

The ability to pass a good examination in the drill regulations is not conclusive proof of the practical knowledge essential to a drill instructor. The details of the drill must be so firmly fixed in the mind that the slightest departure therefrom is instantly noted. Infantry drill is an exact science and should be carried out exactly. But it is also a practical science, and cannot be acquired from the book alone, but must be learned also on the field. It is full of little points and "kinks" which cannot be all included in any manual.

Without such intensive study both of the drill manual in his room, and of the drill itself on the field, an officer cannot acquire the exact and complete knowledge that is necessary, and the drills which he conducts will fall short of perfection.

Frequently on the drill grounds one may observe mistakes in technique which have been repeated and persisted in until they have become fixed habits. Often an organization will drill for months without once performing certain movements correctly, and without showing any progress or improvement. The reason is found in lack of study by the drill instructor. Often one may see an officer conducting a drill who manifestly knows less about its details than the men under him. It goes without saying that an officer should know more than those he instructs. If he does not, they will promptly perceive it, and he will lose their confidence.

The good drill instructor refreshes his mind before each drill by reading over the paragraphs referring to the movements to be executed. He is constantly studying to find something new to teach his men, to learn the mistakes most commonly made and how they may be avoided. He will not expect to find in the regulations all the points he should consider. He must read between the lines, interpret the regulations, and study the drill itself.

That portion of the drill regulations pertaining to the school of the soldier and the school of the squad is brief. It does not require an exceptional intelligence to comprehend it, but it does require unremitting study and application. Study the drill regulations as you would study arithmetic and spelling. For instance, the regulations contain certain general rules pertaining to the duties and the position of

guides. In studying each movement, the instructor should apply these rules so that his instructions will cover the duties of the guides.

Each movement should be studied with a view of determining what man in each rank or what unit is the key to the successful execution of that movement and just what these key men or units do. A great many movements can be executed best when the command of execution is given on a certain foot. This can be easily determined if the instructor will consider himself the pivot man and then give the commands on one foot and then on the other, executing the movement in each case.

Study each movement with a view of making your explanation of it easy for your men to understand. Try to determine the errors that are usually made, why they are made, where you should be to see them and how best to correct them.

PROPER METHODS OF INSTRUCTION.

The possession of knowledge is more common than the ability to impart it. There is many an artisan who is himself skilful, but lacks the knack of teaching others.

The American likes to know the reason for everything that he is required to do. Blind obedience, the belief that it is not his place to "reason why," is not characteristic of the best type of soldier. There is a reason, and a good reason, for every movement prescribed in the regulations. If the instructor will explain these reasons he will win the confidence and support of his men. They will take a pride in performing movements exactly as prescribed when they appreciate the reason, and the progress of the instruction will be rapid. They will seldom ask questions, and the instructor must anticipate and answer the unspoken question, "Why?" For example, the pivot man in SQUAD RIGHT may not know the reason why he should mark time during the turn. Explain this, demonstrate what happens when he fails to mark time, and he will co-operate to execute the movement correctly.

Long explanations or speeches are to be avoided. They are tiresome, dull the interest, and even sometimes arouse hostility. Make your explanations brief, and follow promptly with a demonstration. Having been told how to do something, the average American then likes to try it.

Each drill instructor necessarily has his personal characteristics, and apparently diverse methods have produced good results. But if we carefully examine the methods of many successful drill instructors we will find that in general they proceed along the following lines:

a. Explain briefly and clearly the movement to be executed. Let the men stand at ease during the explanation.

b. Demonstrate the movement, show them how it is done. If it is an individual movement do it yourself. If a squad movement, call out a squad. Explain what each man does.

c. Cause the individual, squad, section, etc., to execute the movement at command.

d. Do not overlook a single mistake or omission. Point them out and correct them on the spot.

e. Continue to repeat the movement until a reasonable degree of perfection has been attained. Do not change to another until this has been accomplished.

f. Make the drill progressive, proceeding from one movement to another in the order prescribed in the schedule.

g. At the beginning of each drill briefly review the movements taught in previous drills.

h. *Have a minimum of marching and a maximum of movements during close and extended order drills. When you march your platoon one hundred yards and fail to execute several movements during that distance you have lost precious time as well as an opportunity to give instruction.*

i. At the conclusion of each drill, have a few snappy and well-executed movements in the Manual of Arms.

Definite plan for drill. A definite plan for conducting drill will bring better results than trusting to luck with no plans. In other words every drill should be

conducted in accordance with a progressive schedule, prepared in advance, and not at haphazard.

Plan at least one movement ahead. The good drill instructor must be able to think ahead. His mind must not be so taken up with the movement being executed that he can think of nothing else until it is finished. For example: It is wrong to form line from column of squads, and just about the time the men get into line decide to halt them. The halt will, of course, be ragged, and the fault will be entirely with the instructor. If the preliminary command halt cannot be given in time, it is better to let the squad go forward a few steps and then have it execute halt as a separate movement.

Don't give instructions while marching. A good instructor will seldom if ever give explanations while the squad is marching, as much of the effect would then be lost; nor will he give an explanation after he has given a preliminary command. If he does the latter many times, he creates the impression that his knowledge of the drill is not as good as it should be, and the men lose confidence in his ability to instruct. If a preliminary command is given it is better to let the movement go on to completion, if possible, rather than to be continually saying: "As you were."

The squad should generally be "At ease" when explanations are given. There will then be little need for the men to rest during the drill period.

Ground should be suitable to movement. When the instructor decides to execute a movement he must see that the ground on which it will be executed is suitable. An instructor who halts a squad in the ruts of a wagon road and then gives "About face," cannot expect a proper execution of the movement.

Keeping the step. Many drill instructors count "one, two, three, four," etc., continuously except when giving commands and explanations, until it becomes a habit with them. Indicating step and cadence diverts the instructor's attention from the other important things and the men in the squad become used to depending on it and make less effort to keep in step. Step should be indicated only when it appears that the squad is about to lose step, or is out of step, and the counting should cease as soon as the squad is in step. The men should be told that when they are in a column formation, it materially helps to keep in step by observing the swinging of the arms of the men in front and the rise and fall of their shoulders. This will give them the cadence. Both file closers and the drill instructor should make it a point to stay in accurate step with the leading guide, so that the men in ranks may get the correct step from them. The drill instructor should remember that the constant indicating of the step signifies inattention on the part of the men in ranks probably because of the manner in which he is conducting his drill. When it is necessary to announce the step, count *one, two, three, four*, or *left-right* about twice, which is sufficient if the men are paying the proper attention. All indicating of the step should cease with the preparatory command, so that the command of executing will be heard.

Don't give strange combinations of movements. Movements not in the drill book, as well as strange combinations and variations should never be attempted. For example, "To the rear, MARCH," "Squad, HALT" in one movement is impractical and valueless.

Don't take drill book to drill. The drill book should never be taken to the drill field. An instructor's knowledge should be such that he has no need for the book. A reference to the book in the presence of his squad will impair the squad's confidence in its instructor. If the instructor is not sure of a certain movement he should try those he is sure of and look up the others at the first opportunity.

Changing men in ranks. Each man must be trained in every position in the squad, in both front and rear rank.

Imagine yourself in ranks. The good drill instructor will do his utmost to help his men and make it easy for them to learn. He should put himself in their places and ask himself: "Are my explanations clear and simple?" "Is there something I could do to make it easier?" "Why do they make certain mistakes?" These questions will often suggest a way to help them.

Instructions or explanations of movements should be worded so that the dullest man in the unit will understand them. It is a common error to talk too fast, to use words the men cannot understand and to direct the explanations at the brightest men instead of at the men whose minds are not so quick but who need assistance the most.

Use of motion pictures. Motion pictures should be used whenever possible to supplement the drills. As a race Americans are movie fans. Our leading educators recognizing that it is easier to learn through the eye than through the ear, are instituting motion picture courses in certain subjects to supplement classroom work. During the World War many of our best drill instructors found that motion pictures used in connection with the drills not only shortened the period of recruit training but stimulated the enthusiasm of the men.

Position of the Instructor.

The position of the instructor with reference to his unit is a matter of great importance. He should be far enough away to see all of his men, but close enough to detect mistakes, and to be heard by all when he gives commands or explanations in the usual tone.

Inexperienced instructors often have a tendency to get too close, so that they cannot see all their men, nor observe what the unit as a whole is doing. On the other hand a careless instructor will allow his unit to get too far away from him, because he is too lazy to keep up with it. He is thus unable to observe the details of movements and to detect mistakes.

The larger the unit, the greater, of course, the distance at which the instructor should post himself. Details of individual movement can often be detected only at close range. They should be taught in the schools of the soldier and squad, where the instructor is close by. In the case of a platoon or larger unit the instructor should be at such a distance that he can observe the conduct of the unit as a whole.

The instructor is not tied to any one place. He takes position where he can best control his men and observe the mistakes which pertain to the unit he is drilling and the particular movement which is being executed. Such position he must learn for each movement by observation and common sense.

While making explanations the instructor should be in front of and facing his unit, at such a distance that all the men can see and hear him. A like position is appropriate in giving commands at a halt. If the unit is marching in line the instructor may be on a flank, slightly in rear, or in front. In column of squads a good position is on the flank about opposite the center of the column. When a movement is executed toward a flank the instructor should generally be on that flank as he can there best observe the most probable mistakes.

There is no invariable position for any movement. The instructor places himself where he can best see the mistakes he anticipates.

Correcting Mistakes.

Mistakes tend to repeat themselves, and if too often repeated become fixed bad habits. Many drill instructors say they would rather undertake the training of perfectly green men rather than men who have been carelessly trained in the first place.

The instructor must cultivate his faculty of observation until he can instantly detect anything wrong. Unless he can do this he will never be a good instructor, and will never have a well-drilled unit.

When a mistake is committed the squad should be immediately halted. The particular man or men involved should be told of the mistake, the reason why it was made, if possible, and the correct manner of executing the movement again explained and demonstrated if necessary. The movement should then be *at once repeated* until a reasonable degree of perfection is demonstrated. It is useless to wait until the next drill or even to repeat the movement after several others have intervened, as the men may have forgotten the explanation and its effect will be lost.

When a mistake which has been previously corrected is repeated the instructor should call the attention of the men to the fact, that they are *repeating a former*

mistake. Never under any circumstances should they be allowed to continue the same mistake.

Sometimes an instructor will correct a minor mistake, while allowing a more serious one to pass unnoticed. This is due to the fact that he has not developed the power of critical observation. The serious mistakes should be dealt with first and those of a minor nature subsequently.

There is a psychology involved in the correction of mistakes. The skill of the instructor is shown not alone in detecting mistakes, but chiefly in so impressing them on the minds of his men that they will be careful not to repeat the same mistakes in the future.

The correction of mistakes should never take the form of nagging or continual fault finding. In the absence of plain indications to the contrary the instructor should assume that his men are endeavoring to do their best, and this will usually, almost invariably, be the case under a good drill instructor. Accordingly when mistakes are made it is due to ignorance more frequently than to indifference or inattention. If things are going very badly it is usually the instructor who is at fault.

Therefore the instructor should be patient. He should explain the mistakes committed, in a quiet, dispassionate manner, and encourage the men to correct them by a remark such as, "Let us get it right this time." The men may then be depended upon to put forth their best efforts.

Never censure or even admonish an entire squad or larger unit because of the mistakes of one or a few men. Announce the name of the offender and then tell him of his mistake, thus: "Jones, depress the butt of your piece," "Brown, guide right," etc. Sometimes a mistake may be corrected by asking a question. Ask the question, and all will mentally prepare to answer it. Then call on the man who has made the mistake for the answer.

It will not always, of course, be advisable to immediately halt a larger unit, such as a section or platoon, because of minor mistakes by one or more men, as this will unnecessarily delay the drill and waste time. Slight mistakes may be corrected during the movement. Upon its completion all mistakes observed should be mentioned, and if they are sufficiently serious, or pertain especially to the movement in question, it should be immediately repeated.

Endeavor to give your men the impression that your sole interest is to achieve a perfect drill. Conduct yourself so to arouse the same interest in them until they feel that they are working with you to achieve the desired results.

The instructor should be sparing of reprimands. It may occasionally be necessary to reprimand a man during drill, especially when it is clearly evident that he is not paying attention. The reprimand should be administered in such a manner as not to offend the man's self-respect and dignity. If reprimands are too frequent they lose their effect.

A junior officer or non-commissioned officer should never be reprimanded in the presence of his men. This humiliates and lowers him in the eyes of his subordinates. If it be necessary to censure or admonish him, call him to one side, out of hearing of others.

Some men are extremely sensitive to criticism. If it has been necessary to censure such a man severely, it will often be wise to later address to him a few remarks calculated to dispel any resentment he may have harbored. By this we mean to address remarks to him, so that he will know you are still interested in him and that you are friendly to him.

Above all an instructor should never under any circumstances permit himself to lose his temper, display impatience or anger, or, especially, swear at his men. Such conduct is the mark of the incompetent drill instructor and plainly demonstrates his unworthiness to hold his office. To swear at a man is even more foolish than to swear at an inanimate object. In the case of an object it certainly does no good, but in the case of a man it usually does great harm. A display of temper and harsh or abusive language usually have little effect other than to arouse resentment and hostility and to close the eyes and mind of the man to reason.

Commendation and Encouragement.

With the right kind of men commendation produces better results than censure. Therefore, if the squad executes some movement particularly well do not hesitate to tell them so. And if the drill as a whole has been satisfactory, inform the men to this effect at its close. Let them know that you appreciate an honest effort, and they will put forth still greater effort.

If an individual has been noticeably slow and awkward, the first time he shows the least improvement, tell him so, and he will thereafter try the harder.

Remember that you are dealing with human beings, who need encouragement and who will respond to it. It is results that you seek and you cannot achieve them unless your men are with you. Praise should not be given unless it has been earned, and should not be withheld when it has been earned.

The awkward squad. Men who are backward and slow in picking up the drill should not be allowed to unduly delay the training of the others. It may therefore be wise to place the men in groups according to their state of progress. But never under any circumstances should the group containing the least proficient men be known as "the awkward squad"—an institution formerly much in vogue. This is offensive to the pride of men who are trying to do what is right. It is better to allow a man to feel that he is promoted to the advanced squad when his proficiency warrants it, rather than to have him feel that he is set back into an awkward squad.

Competition. Competitions of various kinds between individuals and between units of the same organization, are a most valuable means of stimulating interest and pride in training. Almost every item of training lends itself to competition. The results of competitions should be posted on the bulletin board.

Manner of Giving Commands.

The precision and snap with which a drill is executed will depend very greatly on the manner in which the commands are given. The best trained organization will make a poor showing in the hands of an officer who cannot give commands correctly. If they are given in a careless, hesitating or drawling manner, they will be executed in the same spirit. On the other hand if the commands are given correctly, clearly and forcefully, the men will realize that the instructor knows the game, and they will put forth their best effort.

Give commands distinctly. Every word of a command should be so distinctly pronounced that it may be readily understood by one who has never before heard a command. The entire command as formed in the throat should be allowed to come out unobstructed by the lips or teeth. The mouth should be opened wide and the sound should come out freely. Many drill instructors make strenuous efforts to be heard, when less physical effort and more opening of the mouth and throat would improve their commands.

The preparatory command. Each preparatory command is enunciated distinctly, with a rising inflection at the end, and in such a manner that the command of execution may be more energetic. The pitch of the preparatory command should be as nearly as possible that of the normal speaking voice; that of the command of execution a little higher. Many instructors pitch their preparatory command too high and then find difficulty in going still higher for the command of execution. In preparatory commands of more than one word it is wrong to slur two words into one. "Squads right" is often given "Squadsright," as if it were one word, and with so much emphasis on the "Right" that "Squads" is hardly heard. The two words are of equal importance and should both be clearly enunciated with a slight interval between them, and with a rising inflection on the "Right." The preparatory command must not be so energetic that the command of execution cannot be still more so.

The time interval. There must always be the same interval of time between the preparatory command and the command of execution in directing a given movement. To change the interval will mislead the men and prevent their executing it in unison.

For example: Men can readily be trained to move out with a full step at the command "MARCH," given from a halt, provided there is always the same interval of time between the preparatory command and the command of execution. If, however, the instructor fools them very often, he will not be able to get them to take a full step, as they cannot depend upon him to do his part, no matter how ready they may be to do theirs.

The command of execution. The command of execution should come as an explosion that will make the men jump. It should be given with a tone of finality. For example: The command "HALT," given as in the sentinel's challenge, "Halt, who is there?" will give the best results. The same applies to "MARCH," which should also be pronounced as it is spoken, rather than "HARCH," "How," or other substitutes. *Let the command have "pep" in it and there will be "pep" in the drill.* The troops will give just about what the command calls for; no more, no less.

Position of the instructor in giving commands. If the unit is at a halt the instructor should always be in front of it to give a command; he can easily get out of the way later, if necessary. If in front of the unit, look the men in the eyes when giving commands; if not in front, turn the head and direct the voice towards their ears. Do not throw the voice towards the ground or in some other direction away from the unit. Do not attempt to give a command if the unit is too far away; double time and catch up to it. Similarly, do not give a command if other troops are so close that the squad will not be able to determine which instructor is speaking. Make the size of the element being commanded determine the tone of the command and the position of the commander in giving it. Be certain in giving commands, that your position is such as to take advantage of the direction of the wind.

Bulletin Boards.

The bulletin board is an instrument for discipline and training, the value of which is too frequently overlooked.

The men like to know the news—what is going on, and what is planned for the future. They have a right to such information. The bulletin board should be a sort of newspaper by means of which the commander reaches his men. Of course all important orders and everything pertaining to training should be posted. But this is not enough. Little talks or "editorials" by officers are often best circulated amongst the men by means of the bulletin board. Current information, even if not directly concerned with training, but which may have a bearing on military affairs and which will cause the men to think, should be displayed. Clippings from newspapers or periodicals, photographs, announcements of entertainments or competitions, even cartoons and other humorous items are by no means out of place.

The bulletin board should be a vehicle for current information. If obsolete orders are allowed to remain on it and if nothing new is posted for days and even weeks at a time, the men will soon form the habit of avoiding it, as they will learn that it seldom displays anything of interest. Something new should be posted each day and out-of-date material removed. The enlisted men should be encouraged themselves to submit items for the bulletin board. The material displayed should be so varied that every man in the organization will occasionally, even frequently, find something that will interest him. One has only to note the crowds that assemble opposite the daily bulletins of a wide-awake newspaper to realize the interest that is aroused by an intelligently conducted news bulletin. In a military organization the bulletin board should serve as a newspaper of current military events.

Too often the bulletin board is placed near the entrance to the company office, in a hall habitually frequented by officers, higher non-commissioned officers and clerks. Frequently it is poorly lighted, dusty and generally wearing an appearance of neglect. The bulletin board should be placed where the men naturally congregate

during their leisure—the entrances of the mess hall and squad rooms may be better than near the company office, where loitering is not encouraged. If more than one bulletin is required install as many as necessary.

BEARING OF OFFICERS AT DRILL.

Occasionally officers and non-commissioned officers insist or seem to insist on their men standing up and being smart in both appearance and action, while they (the instructors) are living examples of just the opposite. Go to almost any drill ground and you may observe officers and non-commissioned officers reproving their men for not standing erect and not being snappy, while they themselves are slouching and giving their commands in a lazy and careless manner. A recruit does not appreciate the justice of such a reprimand. Men are imitators. As a rule they pattern their conduct after their leaders. They have a right to a good pattern, and it is the duty of drill instructors to give their explanations and commands in a military manner, and at the same time look the part of forceful, strong, military men. Down in his heart every recruit is so constituted that he is prepared, with the slightest encouragement, to respect his officers. He is prepared to believe that they possess superior knowledge and that they are in all respects superior men. Every soldier wants to feel that his officers are high-toned men. He wants them to be neat, clean and soldierly. He wants to see them stand up straight, carry themselves with dignity, and appear as living examples of all that a soldier should be. When off duty he is proud to tell his friends of such officers, and to point to them.

The power of example is something well known and appreciated. In the military service it is the principal basis of that intangible attribute known as *esprit de corps*, which constitutes at least two-thirds of the fighting efficiency of an organization.

So it is necessary that a drill instructor look and act at all times on the drill field and elsewhere like a trained soldier, if he is to create in the minds of his men a desire to be like him. They are being trained to be soldiers, and the model should be actually before them. They should not have to depend on their memory of some other soldier they have seen, or on their ideal of what a soldier should be.

The better dressed the drill instructor is, the more his men will admire and try to emulate him. To dress well requires care and attention to one's clothes. In the case of officers it cannot be accomplished without the expenditure of some money. The instructor must be clean-shaven, his shoes and leggins well polished, and in general he must present a smart appearance.

When giving instructions be at attention. The instructor must always be at attention when his men are at attention. He must also be at attention when giving explanations, even though his men be at ease or at rest. He must continually watch himself, that little mannerisms may not grow to be unconscious habits with him. For example: Excessive or unusual swinging of one or both arms while at drill; using the hands to assist explanations, except when necessary; walking while giving explanations; hands on hips or in pockets, etc., are all to be avoided. When the men are marching or marking time, the instructor should also be marching or marking time and in step with the guide.

Neatness of dress and person at drill. The man who is cleanly in person and neatly and attractively dressed naturally and justly considers himself superior to one who is dirty and slovenly. And it is this sense of superiority which wins battles. Men who are permitted to attend drill in muddy shoes or leggins, torn or soiled uniforms, unclean in person, unshaven, etc., will not drill with the snap and pride which characterizes a good military organization. Such men are lacking in proper pride and self-respect. Therefore require your men to wear good uniforms to drill, but explain to them why you insist on this. Tell them of the relation between cleanliness, neatness, pride, self-respect and fighting efficiency. It is much better to stimulate a man's pride than to punish him for coming to drill improperly dressed.

ENERGY, PERSEVERANCE AND ENTHUSIASM.

Energy. Energy begets energy. One energetic man will quicken the activities of all around him. Unless the instructor has energy he will probably not study his regulations or prepare for each drill and without both physical and mental energy on the drill ground he cannot hope for a well-drilled unit.

Perseverance. The constant dripping of water will wear away a stone. It often requires similar methods to impart information and train some men. The officer with plenty of perseverance will eventually train all his men whereas the officer with less stick-to-it-ive-ness will not have such a thoroughly trained unit.

Enthusiasm. Enthusiasm is contagious. The enthusiastic instructor will have an enthusiastic unit. It has often been said that the man who at the first of his career is not enthusiastic about his business, begins as a failure. This applies with equal truth to the drill instructor. He *must* be enthusiastic if he is to have a well-drilled and instructed unit.

GOOD MANNERS AND PATIENCE.

A drill instructor who has not good manners on the drill field cannot obtain as good results from his men as one whose manners are pleasant, other things being equal. Perhaps the men do not stop to analyze the cause, but they know they would rather drill under one instructor than another, even though the former makes them work harder.

Patience is necessary, and the instructor who possesses plenty of it and never loses his temper, will have his men always trying to do their best for him. Never show by the faintest mannerism any annoyance when one of the men displays stupidity, slowness or awkwardness. Consider it rather the instructor's fault that the man does not learn faster. Of course it may be necessary to transfer certain men to a new squad in order not to hold the others back, but this should be done in a manner that will not wound the feelings. The instructor may be sure that the awkward recruit is chagrined and regrets much more than the instructor, that he is not learning as fast as his comrades. When a soldier makes a mistake on the drill field such expressions as "Where are you going?", "What are you doing there?", "Didn't I tell you not to do that?", "Don't go to sleep out there," on the part of the instructor, can do no possible good. Directed to a sensitive, high-strung man, they cause embarrassment or arouse a feeling of resentment. Always remember that the men are the material being trained and moulded for the work of battle. They should be handled with the same care which an expert artisan gives a fine tool. The instructor should exercise extreme care that his manner and tone of voice convey no intimation of a feeling of superiority, a contempt for his men, or other annoyance. If he is a superior man there will be no question of his being recognized and respected as such.

Sarcasm, vulgarity, profanity, and undue familiarity with the men are of course utterly out of place on the drill field and everywhere else. Sarcasm directed at a man who is unable to defend himself is the most contemptible form of cowardice. An officer cannot descend to familiarity with an enlisted man one moment and reprove him for misconduct the next, without grievous injury to discipline and morale. Be democratic, courteous, kindly and considerate of your men, but never familiar.

Spare the men all unnecessary hardship or annoyance. Do not march them through mud or water when "Column right" or "Right oblique" for a few steps would move them to good ground. If called away from the squad by a senior officer, the instructor should leave the men "at ease" for he does not know how long he will be away. If he does not leave them "at ease," the officer calling him away may direct him to do so.

Save the men unnecessary mistakes. Do not give the command "Right Face" immediately after having given "Right dress." If the instructor does this without some intimation that a different movement is coming, he deliberately fools them and their mistakes are chargeable to him.

The instructor should freely and frankly admit his errors. No instructor is infallibly correct, and frankness in the admission of his mistake will secure the good will of his men and will expedite training. Needless to say, too frequent admissions of errors on the part of the instructor will lose him the respect of his men.

DISCIPLINARY VALUE OF INFANTRY DRILL.

Discipline in the military service is not unlike discipline in any other line of endeavor, but it is more important. It has been variously defined as: "A spirit which causes men to put forth their best efforts in carrying out the will of their commander"; "Willing and instant obedience to the commands of a superior," etc.

The properly disciplined man is dependable, willing, prompt and consistent. He can be depended upon to execute his superior's commands, or to carry out his wishes even when he is not present. The disciplined man is willing, he acts promptly, and he does everything consistently, according to the precise methods that have been taught him. These are cardinal military virtues which are included in the term "discipline."

It has long been recognized that infantry drill has a high disciplinary value, and indeed this is the chief reason why it holds so important a place in the scheme of military training. Through the medium of infantry drill the recruit learns to respond promptly, unhesitatingly and willingly to the will of a commander. And he learns that there is a right way to do things and that even the simplest movement should be executed correctly and precisely. He learns that lack of promptness, and indifference, cannot be tolerated, and the reasons why they cannot be tolerated. As a result of repeated drills it becomes the habit of the recruit to do things in the manner prescribed by the regulations. And this habit is not limited to his conduct on the drill field. The well-drilled man usually performs *all his military duties* in the same punctual, unhesitating and precise manner that characterizes the movements of a well-drilled unit. When such habits have become part of his nature the soldier is thoroughly disciplined, and is a man whom his commander can depend upon to function efficiently and produce results in the stress and confusion of battle.

Accordingly, discipline is the foundation of military efficiency, and infantry drill is the chief means of inculcating discipline. But the drill will have little or no disciplinary value unless it is executed with snap and precision in the last detail. This should be explained to the men, who often do not realize what discipline means nor how it is promoted by properly conducted drills. If they can be made to realize the value of the drill they will put their hearts into its execution, and nothing less than this should satisfy the instructor.

Infantry drill should be given frequently in order that the spirit of discipline may be established and maintained. During the drill the instructor should demand the undivided attention of his men. As they cannot be expected to maintain their interest at a high pitch for any considerable length of time, nor after they are physically and mentally wearied, drills should be short—usually not longer than one hour. And in addition there should be short and frequent rests during the drill itself. The drill should be varied by the execution of a number of different movements, in such manner as to require the men to mentally participate. This idea may be carried further by requiring the men themselves to give the commands for the movements, on signal or at a certain time (cadence system).

Good infantry drill, not too frequent nor of too long duration, may be made both interesting and pleasant, and such a drill has a very high disciplinary value. Such drill must be carried out in accordance with a definite schedule, and to make it interesting will tax the ingenuity of the drill instructors. But the results which will be obtained will far more than justify the effort.

EXTENDED ORDER DRILLS.

The purpose of extended order drills, including Musketry, is to teach the methods of directing and controlling the fire and movement of the small infantry units in combat. Such drills have also a disciplinary value, in that they accustom the men

to the direct control of their immediate battle leaders, and require the subordinate leaders to exercise their battle functions.

Extended order drills are usually executed "at ease" and in a less precise manner than close order. Accordingly there is a very strong tendency to "let down" and conduct the drills in a careless fashion with too little attention to necessary details. This tendency must be combated. The drill should be thoroughly done, with as much attention to details as its nature demands. While the bodies of the men are "at ease," their minds should be constantly "at attention" and they should not be allowed to get out of hand and wander about aimlessly. If they are not properly controlled at extended order drill it will be quite evident that they cannot be controlled in battle, with its noise and confusion.

During extended order drill company commanders and platoon leaders should make no attempt to command the attention of and personally direct the men. They should exercise their proper functions as leaders by controlling their men through their subordinate leaders. The men of each squad should look to their own corporal for commands or signals, and be at all times mentally alert to execute them. The corporals, in like manner, look to their section leaders for orders.

The attempt by the higher leaders to control their men directly and personally is a mistake often made, and it naturally leads to bad consequences. As such personal control will be impossible in combat it should not be attempted in training. It is accordingly essential to successful extended order drill or musketry training that non-commissioned officers be thoroughly familiar with their duties and responsibilities as leaders of the fire units (squad and section). If the drill be attempted before the non-commissioned officers have been properly instructed it will do more harm than good as a means of discipline and training.

The importance of extended order drill lies in the application of disciplinary methods to the control of troops in combat. Too often it is conducted in a careless and perfunctory manner.

Reviews and ceremonies. Reviews and other ceremonies, if not too frequent, have a stimulating effect on the morale and esprit of an organization. The greater the pomp and ceremony with which they are conducted the better, as a rule, will be the results.

It adds greatly to the value of a review if some distinguished personage can be induced to attend and address a few remarks to the assemblage.

Physical Drill.

Physical drill is a means of strengthening and improving the muscles, especially those which are underdeveloped or those which are little used in the ordinary activities of life; and of raising the general physical tone of the body. But in addition to this a physical drill properly conducted, with precision, snap and enthusiasm, has a high disciplinary value. And it serves also to add variety to general training.

Team Work.

A well-drilled company, platoon, section or squad is a well-drilled team. It is like a successful football team. It has team work. A great deal of preliminary instruction essential to teamwork can be given off the drill ground. Know intimately your officers and non-commissioned officers. Encourage them to bring their troubles to you. Give them as much authority as they possess ability. Let them know that you are behind them as long as they do not abuse their authority, but insist that they know more than the men they command. They should not only know their Regulations, but each should be required to specialize in some line of work or instruction. Instruct them in leadership.

Hold at least one conference each week with your officers and non-commissioned officers. Let them know in advance what subjects will be taken up. You must put a great deal of work and thought on these subjects to be discussed, otherwise the conference will be a failure and a waste of time. Discuss with your assistants all

your thumb rules or checks for the execution of each movement in the drill regulations. It is in this way that you will establish uniformity in the corrections and insure good team work.

Look upon your non-commissioned officers as assistants. Treat and train them as such. They should have the benefit of your experience and advice and you should have the benefit of their point of view. In a word, use them to help you build up a team. Discourage undue familiarity between them and the privates. Try in every way possible to increase the self-respect and prestige of the non-commissioned officers. Make them proud of their rank and of the company to which they belong, and your organization will soon acquire discipline and *esprit de corps* (company spirit). Always give your company, and especially your officers and non-commissioned officers, advance notice of drills and the instruction expected of them, so that they may prepare for it. Platoon *esprit de corps* and efficiency can be created in a like manner.

Try to inculcate the spirit of fair play in the breast of everyone of your assistants or non-commissioned officers. Encourage men to bring their troubles to you.

Officers should meet, whenever possible, the parents of their men. To do so will improve the team work and discipline and give each officer a better hold on his men. It means a great deal to a mother and father to know the officer who commands their boy.

A FINAL WORD.

Now it is proper to consider the drill instructor's relation to his immediate superiors. You have no business commanding unless you have first learned how to obey. The finer the training and caliber of an officer, the more sensitive is he to the wishes of his commanding officer, however informally they may be expressed.

The ideal officer is a Christian gentleman who has no task too small to faithfully perform, whose country's welfare is above his own, ready for any sacrifice great or small; whose thoughtfulness and efficiency last 24 hours a day, whose relations with his superiors are based on modesty, cheerfulness, and loyalty.

Consider this a message from the father and mother whose son some day may have to serve under you during some future war:

"I want my boy to do his bit. I want him to willingly submit to all sacrifices. I don't limit them. I expect him to become efficient. I expect him to obey orders. That means all orders. Wrong orders as well as right orders.

"But I want him to have a fighting chance. I don't want him to serve under an inefficient officer who is playing to the galleries; who is in the habit of doing things wrong instead of right. If the worst should come, I want my boy to perish for a good cause. I don't want any blunders about it.

"In willingly placing my boy under your orders, I charge you with a sacred task. I charge you to train and lead him efficiently."

CHAPTER XII.
MAP READING.
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MAP READING.

Introduction.

There is probably nothing that an officer in the field in time of war has to do more frequently than to read a map. He consults his map oftener than he eats his meals. In an emergency he can get along without a meal. But an emergency is just the time when he will usually most need his map.

The game of war is played on a map. All military operations from those of a great army down to those of a small patrol are planned and carried out with the aid of maps. Therefore no officer is qualified either to lead or to train men unless he can read a map. In time of peace the map is the principal instrument used in teaching the military art. If you intend to continue your studies until you have qualified yourself as an officer, you must first learn map reading. Otherwise you will not get very far.

There is nothing mysterious about maps. They are intended to help you, not to mystify you. They are made on common sense principles, and any person of average intelligence can learn to read them. It requires no knowledge of mathematics, other than simple arithmetic, and no talent other than plain common sense.

Map reading is not a subject that military men alone should know. It is quite as necessary in many civil professions, and whatever line of work you intend to follow it is almost certain that some time you will have to read a map, and will do your work better if you take advantage of this chance to learn how. Map reading is an interesting and pleasant study, and a good training for your mind. It develops your powers of observation and reasoning as much as any other study.

Map reading is a very practical art. The way to learn it is to get some maps, study the things that they show, and solve the little "map problems" such as we will give you in this course.

The use of the compass, while not strictly a part of map reading, is of so great importance in all military operations that a description of the compass, and instructions as to its use have been included.

Maps and sketches defined. A *map* is a graphical representation to scale, on paper, of a portion of the earth's surface. "To scale" means that a certain distance on the map, one inch for example, always represents a certain distance on the ground, as one mile. It also means that all points on the map are in the same relative horizontal position as the points on the ground which they represent.

A *military sketch* differs from a map in that it is made with very simple instruments, in a short time, and is hence rougher in appearance and less accurate than a formal map. It is a crude map.

A map accordingly is a picture and description of an area of ground, on a small scale. A good map contains more information than a volume of description. In fact no verbal description can possibly give the information concerning the terrain that is exhibited in a glance by a good map.

A map differs from an aeroplane photograph in that the information concerning the ground is conveyed by means of symbols known as *conventional signs*. These symbols resemble the objects they represent, but in most cases are greatly simplified and conventionalized. A knowledge of what they mean is necessary to a proper understanding of the map. In addition to the symbols the names of particular localities also appear on the map.

Map reading. Map reading is the art of interpreting or understanding the information given by a map. It is not sufficient that the reader should merely understand the meaning of the symbols used. A complete map should give a practical reader a mental idea, a real picture of the ground which it represents. The value of the

map to its user depends on the vividness with which he pictures in his mind the actual appearance of the ground represented, and on the amount of detailed information which he can get from the map.

The important items of information derived from the reading of a map are *distance, direction, natural and artificial features* (as indicated by *conventional signs*), *elevations and ground forms*. Each of these will be discussed in detail.

Classification of maps according to use. Maps are of various classes and scales (size) according to the purpose for which they are to be used, and the nature and amount of the information they carry. A simple road map, for example, shows merely a number of lines representing the positions of the roads, and dots showing the locations of the towns along them. Such a map is no picture of the ground—it is not intended to be. A complete topographical map, on the other hand, conveys to one who understands it, a birdseye view of the countryside, the hills, ridges, streams and valleys, the roads, buildings, fences, crops, etc.

A *military map* is one which shows such information as may be useful for military purposes. There are of course, various classes of military maps according to the particular information to be shown.

The classification of maps may be illustrated by an example. Suppose it were desired to plan a movement of troops by rail from the Atlantic to the Pacific Coast. There would be required for this purpose a map on a sheet of moderate size, which could be taken in at one glance, showing the principal railroads and their connections, the boundaries of the states, the two coast lines and the location of the principal cities with reference to the railroads. Such a map to be a single sheet must be of small scale. It would be far from a complete map of the territory represented, yet it would give all the information necessary for the purpose for which it was used. Unnecessary details would be merely confusing.

Suppose, however, an officer were given the problem of locating lines of intrenchment for the defense of the city of Washington against an attack from the south. He would require a map on a fairly large scale, and hence in several sheets, showing the city and the adjacent territory with all its hills, valleys, streams, roads, railroads and buildings, because all of these features would be of importance for defensive purposes. And in addition, to grasp the situation as a whole, he would need a map in a single sheet on a smaller scale, showing in outline the location of Washington and the surrounding towns, the principal rivers, the main roads and railroads, and *the areas covered by each of the larger sheets* in their proper relative positions. This latter map would be what is called an *index map* or *reference map*.

In these two cases it will be noted that the map appropriate to either would be entirely useless in the other, because of their difference in scale and the nature of the information they show.

DISTANCE.

Map Scales.

The first feature of a map to be considered is its *scale*. The scale of a map is the ratio between any (which is *every*) horizontal distance on the map and the same horizontal distance on the ground. Thus if two houses are 1 inch distant from each other on the map and 5000 inches on the ground, the scale of the map is 1 to 5000, or as a fraction, $1/5000$. This ratio is known as the *representative fraction* (R. F.) of the map. It is always written with a numerator of unity. Thus if 3 inches on the map represents 90,000 inches on the ground the R. F. would be $1/30,000$ and not $3/90,000$. A map is said to be on a *large* scale when its R. F. is large (*i. e.*, when the denominator is *small*) and vice versa. Thus a map with a R. F. of $1/1000$ is a very large scale map, and one with a R. F. of $1/10,000,000$ is a very small scale map.

The scale is of great importance to the user. Without a scale all distances on the map would be unknown, hence the reader seeks first to find the scale by which he must measure the distances he wishes to know. The scale of a map also fixes its *size* relative to the area of ground which it represents, and hence the amount of detailed

information concerning that ground which can be placed on the map. For example a map on a scale of 1 inch equals 25 feet (R. F. $1/300$) could show the actual size of individual buildings, even the width of the sidewalks in front of them, and the location of each separate tree along the roads. A map on a scale of $1/200,000$ would not show individual buildings at all, sidewalks and trees would not be thought of. The roads would appear merely as lines, and woods in outline only. The first map would serve the purposes of a landscape architect, the second those of a general disposing the large units of his command.

Proper scale, how determined. The proper scale for any map is determined by the purpose for which the map is to be used, as fixing the amount of detailed information needed. For reasons of economy, in order that map sheets may be no larger than necessary and yet cover as much territory as possible, the scale of any map should be the least that which will show the necessary details. A map of the United States on a scale of $1/1000$ for example, would be perfectly useless as a map of the United States. It would take an hour to walk across it.

For use in the field in campaign, very large map sheets are inconvenient. 18 x 24 inches is a convenient size, and anything larger than 24 x 36 inches is usually a nuisance. In an office, where walls and tables are available for the display of maps, much larger sheets are permissible. Map sheets are usually printed in relatively small sizes, and large maps for wall display are made up by piecing together several sheets.

The standard Geological Survey Sheets are 20 x 16½ inches—a very convenient size for field use.

In the field, maps may be carried in leather cases with celluloid faces which permit the map to be read without removing it from the case. These are convenient for carrying the maps and protecting them from the weather, wear and tear.

The representative fraction completely determines the scale of the map. But its use involves a calculation of every distance measured on the map. Thus if the R. F. be $1/100,000$ we know that 1 inch on the map represents 100,000 inches on the ground. As we do not measure ground distances in inches we must first reduce this to feet, and then to miles to obtain a definite idea of the ground distance represented. The scale will be simpler to use if it expresses the relation between map distances in their usual units (inches), and ground distances in *their* usual units (feet, yards or miles). Examples of such scales, as usually expressed are:

1 inch equals 200 feet (R. F. $1/2400$).

1 inch equals 1000 yds. (R. F. $1/36,000$).

1 inch equals 1 mile (R. F. $1/63,360$).

Graphical scales. Another still more rapid method of measuring ground distances from map distances, is the *graphical scale*. This is a measuring device printed on the map, in which ground distances, in the usual units, are shown to the scale of the map. For example suppose the scale of the map to be 1 inch equals 1 mile (R. F. $1/63,360$) and we wish a graphical scale reading to 250 yards. 1000 yards on the map equal $1000/1760$ of 1 inch, or about 0.57 inch. We lay off several intervals of .57 inch, each of which represents 1000 yards on the ground, and one interval to the left (known as an *extension* to the scale) divided into four equal parts, each representing 250 yards. The scale would then appear as in Plate 310.



PLATE 310.—Graphical Scale, 1" = 1 mile.

To find any ground distance from the map, copy the graphical scale on a slip of paper and apply it to the map distance to be measured, or take off the map distance on a slip of paper or dividers and apply it to the graphical scale.

It will be seen (Plate 310) that the scale proper reads from *left* to *right* and the extension from *right* to *left*. To take off a distance such as 3750 yards lay a strip

of paper along the scale, make marks at 3 on the main scale, and at the 3rd division to the left of the zero (3×250 equals 750) on the extension.

For distances not in a straight line the graphical scale is inconvenient. It is often necessary in military operations to determine the distance between two points along a winding road. This may be done by taking off all the short straight sections in succession on a strip of paper and applying the total to the scale, or by stepping along the road with a pair of dividers opened to some decimal interval as 100 or 1000 yards. A more rapid method is by means of a *map measure*, which is a small wheel which may be rolled along the road, and a dial which records the distance in inches. The ground distance may then be calculated, or the map measure rolled back to its zero along the graphical scale, the distance it covers being noted.

A graphical reading scale should always be plainly marked to show the *ground* units in which it is graduated.

As an ordinary map is a plane (flat) surface, all distances represented upon it are *horizontal*, or *level* distances. Vertical distances or elevations, and ground slopes are represented by the conventional signs known as *contours*, to be discussed later.

The representative fraction, and a graphical scale in the usual units should be on every map or sketch. If there is no scale, the R. F. may be found by measuring the distance between two well-defined objects, on the map and on the ground. Suppose, for example, that the distance from *A* to *B* on the ground is measured and found to be 1200 yards. The map distance is found to be about $11/16$ inch. Then the R. F. is $11/16 \div (1200 \times 36)$ equals $1/62,836$. This is what would be called an incommensurable scale, and no map, except by error, was ever made with such a R. F. Our measurements were evidently approximate only. If the map is a Geological Survey map (with the scale torn off) we may assume that its R. F. is $1/62,500$, as that is the scale always employed by the Geological Survey. If it is a military map its scale is probably 1 inch equals 1 mile (R. F. $1/63,360$). Having the R. F. a graphical scale of yards or miles is readily constructed as heretofore explained. An erroneous scale on a map is corrected as above, or by comparing the map with the other sheets of the same issue.

Maps of continental Europe are usually on the French metric system, the unit for ground distances being the kilometer, which is about $\frac{5}{8}$ of our mile. Some of the maps used by the American Expeditionary Forces in the late war were provided with graphical scales of both miles and kilometers.

NOTE.—The following approximate rules for rapid conversion of metric units to English units will be found useful:

$$\begin{aligned} \text{Meters} \times 40 &= \text{inches.} \\ \text{"} \times 3\frac{1}{2} &= \text{feet.} \\ \text{"} + 10\% &= \text{yards.} \\ \text{Kilometers} \times \frac{5}{8} &= \text{miles.} \end{aligned}$$

Relation of scale to area. The area of any rectangle, whether on the ground or on the map, is the product of its two sides. Thus a rectangle 2 miles wide and 3 miles long (on the ground) has an area of $2 \times 3 = 6$ sq. miles. On a map with a scale of 2 inches equal 1 mile this rectangle would be represented by a map rectangle 4 inches wide and 6 inches long, having an area of 24 sq. inches. On a map of half this scale, or 1 inch equals 1 mile, the corresponding rectangle would measure 2 inches wide and 3 inches long and the map area would be $2 \times 3 = 6$ sq. inches. Thus in reducing the scale of a map to $\frac{1}{2}$ we reduce its area to $\frac{1}{4}$. If we double the scale we quadruple the area. Thus the areas of any one piece of ground on two maps of different scales are proportional to the squares of the representative fractions of the maps. A map of a certain area on a scale of 2 inches equal 1 mile is four times as large as one of the same area on a scale of 1 inch equals 1 mile. A map of the area on a scale of 3 inches equal 1 mile is nine times as large as one on a scale of 1 inch equals 1 mile.

Scales of military maps. While maps are made on a great variety of scales there is a proper scale for each purpose for which a map is used. The number of different scales should be as small as possible, and *standardized* to accustom us to the use of maps of a certain scale for a certain purpose.

Tactical operations require maps of relatively large scale, and strategical studies maps of relatively small scale. In Europe maps on various scales were available. In the United States the only satisfactory map for tactical uses is that of the Geological Survey on a scale of 1/62,500 or approximately 1 inch equals 1 mile.

- The following scales are appropriate for various military uses:
- 12 inches equal 1 mile.....Instruction in map reading, war game and map maneuvers.
 - 6 inches equal 1 mile.....Same as above. Also for military position or area sketches.
 - 3 inches equal 1 mile, or 1/20,000...Tactical problems. Map reading. Fire control and artillery uses. Tactical map for stabilized warfare. Road sketch.
 - 1 inch equals 1 mile, or 1/62,500....Tactical problems (large units). Tactical map for open warfare.
 - 1/200,000Strategical map. General operations. Supply. Should cover entire theatre of war.
 - 1/500,000 ; 1/1,000,000 and smaller..General strategical maps.

The following scales have been adopted as standards for future use for various military purposes:

- 1 : 20,000 (about 3 in.=1 mile).....Fire control, artillery objectives, fortified and training areas, enemy works, etc.
- 1 : 62,500 (about 1 in.=1 mile).....Tactical map for general use in open warfare. Troop movements.
- 1 : 250,000Strategical map.
- 1 : 500,000 }General maps.
- 1 : 1,000,000 }
- 1 : 2,500,000 }Geographic maps.
- 1 : 7,000,000 }

In actual warfare the maps actually used will be those that are available.

DIRECTION.

We will now take up the next important item in the reading of a map, which is *direction*.

The direction of the north pole we call *north*, and from this we measure all other directions. The opposite direction is *south*, squarely to the right is *east*, and to the left is *west*.

The north pole is a *point*, and all lines running north from all places on the earth's surface eventually meet at the north pole. Therefore these lines are *not parallel* to each other. But the earth is large, and within the limits of the very small areas shown on military maps the north lines are so nearly parallel that the difference amounts to nothing, and actually on these small sheets all the north and south lines are drawn parallel to each other, and all the east and west lines are perpendicular to all the north and south lines.

Usually the border lines of maps are north and south or east and west lines, north being toward the *top* of the map. But this may not always be the case, especially with military sketches. On every map there should be drawn an arrow indicating the direction of north. This line is called the *meridian*. Generally the line running north through any point on the map or on the ground is called the meridian of that point. The east and west line is called the *parallel*.

The four directions; north, south, east and west, are called the *cardinal points*, N, S, E and W. All this can be seen in Plate 311.

The meridian and parallel or north-south and east-west lines at any point, as O , Plate 311, divide the field of view or horizon of an observer at that point into four quarter circles or quadrants, called NE, SE, SW, NW.

Azimuth and Bearing.

The direction of one point from another is called its *bearing* or *azimuth*. These two words are simply different ways of saying the same thing. The *bearing* of any

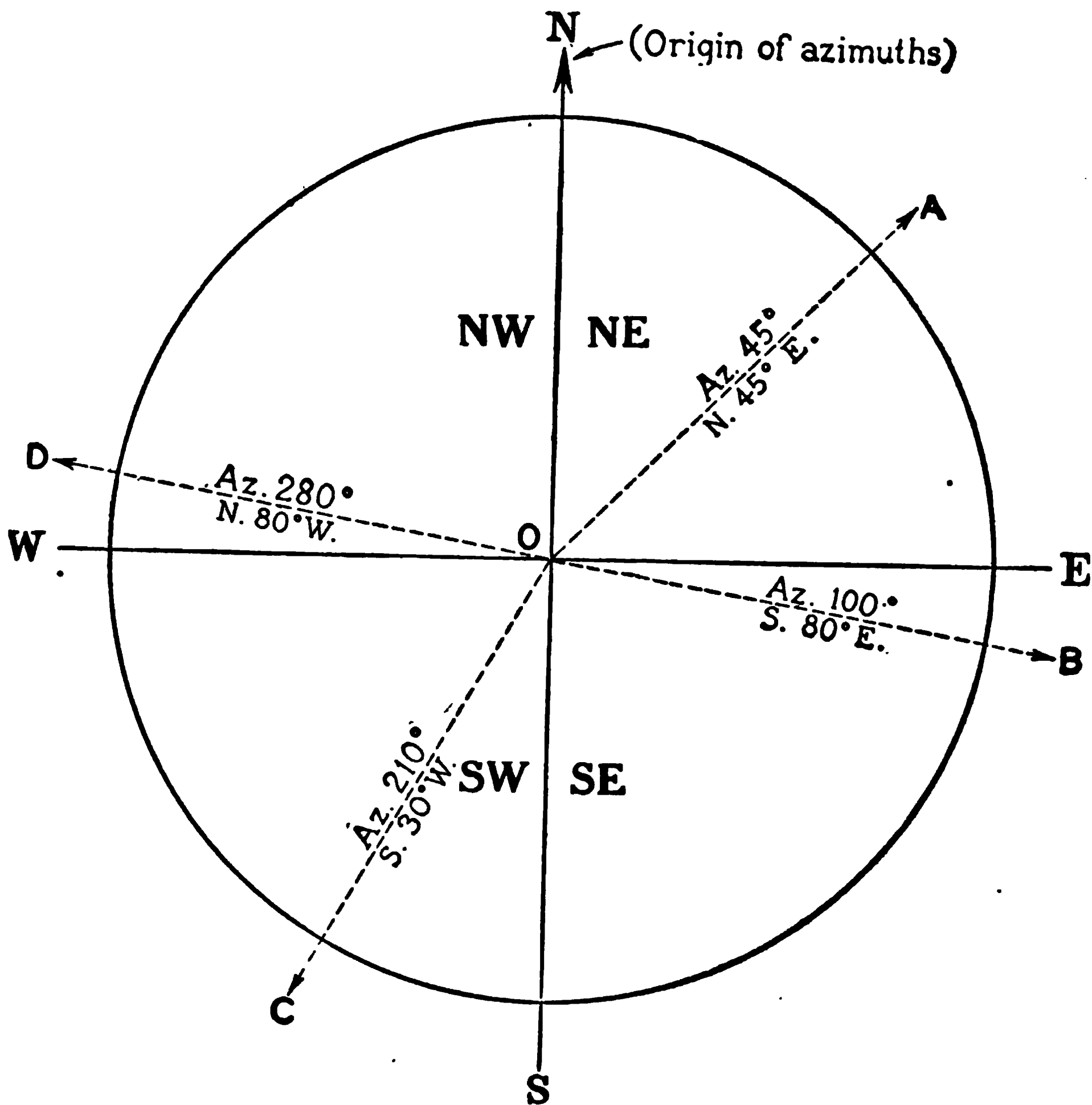


PLATE 311.—Azimuth and Bearing.

line (as from O to A , Plate 311) is expressed by giving the quadrant within which the line lies, and the angle it makes with the north and south line, always measured from the nearer end, thus: $N\ 45^\circ\ E$. The line OB has a bearing $S\ 80^\circ\ E$, measured from the south point. *Azimuth* is measured continuously around the horizon in the direction in which the hands of a clock move, from the north point through east, south and west, to north again. The azimuth of the north point is 0° or 360° . The azimuth of east is 90° , of south 180° and of west 270° . Thus a line in the second (SE) quadrant has an azimuth between 90° and 180° , as OB , etc.

The *opposite* direction is called *reverse bearing* or *back azimuth*. Thus the direction BO (Plate 311) is the reverse of OB , and is the same as the direction OD .

S is the reverse of N, or N of S. A bearing is changed to its reverse bearing by changing the letters representing the cardinal points. Thus (Plate 311) the reverse bearing of OB or $S 80^\circ E$, is BO (or OD) $N 80^\circ W$. An azimuth is changed to its back azimuth by adding 180° if it is less than 180° , or subtracting 180° if it is more than 180° . Thus the back azimuth of OB , 100° is $100^\circ + 180^\circ = 280^\circ$. The back azimuth of BO (or OD) is $280^\circ - 180^\circ = 100^\circ$.

The angle between two direction lines, as OA and OC , Plate 311, is found by subtracting the smaller azimuth from the larger, thus: $210^\circ - 45^\circ = 165^\circ$. If the bearings are given change to azimuths and subtract.

The angle between two directions may also be expressed by a unit known as a *mil*. A mil is the angle subtended at the center of the circle (O , Plate 311) by an arc (part of the circle) equal to $1/1000$ of the radius, or approximately the total circumference is called 6400 mils. Hence 90° is 1600 mils, or one mil is $3\frac{1}{8}$ minutes.

The *horizontal* position of any point on a map as B with reference to any other point as A (See Plate 312) may be found by measuring the *distance* from A to B

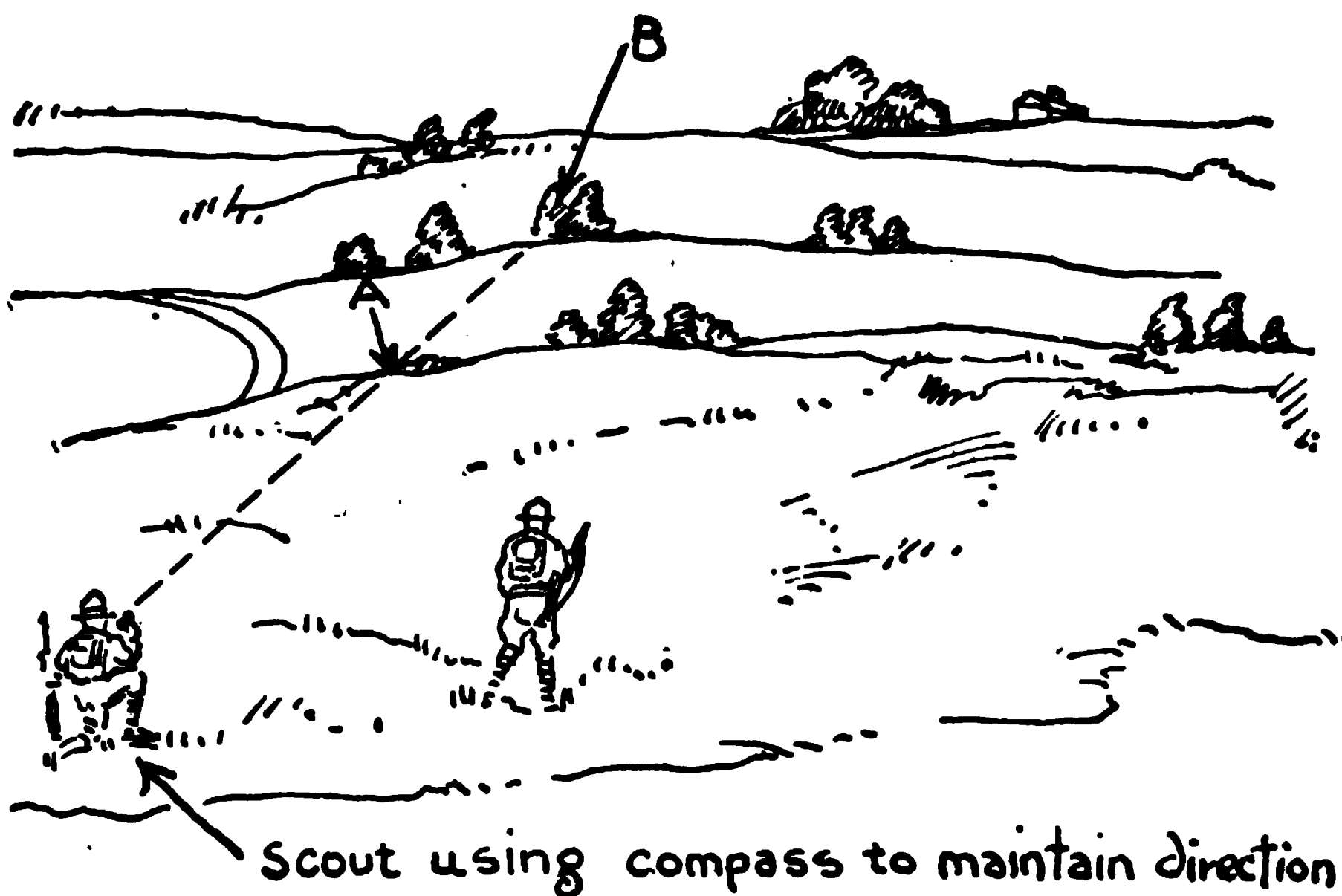


PLATE 312.—Use of the Compass. Laying out a Course.
 A and B are Direction Points Selected by use of Compass.

by the scale on the map, and finding the *azimuth* (or bearing) of the line AB . To do this we draw a line through A parallel to the meridian shown on the map, and draw the line AB . We then measure with a *protractor* (an instrument for measuring angles) or with a compass, the angle between the meridian through A and the line from A to B . On the ground, if we stood at A , faced in the proper direction and walked the measured distance, we should arrive at B .

Rectangular Co-Ordinates. The Grid.

The *location* of a point on the map is a very important operation. We have seen that we can get this by the *direction* (azimuth) and *distance* from some known point. There is another and more rapid method by what are called rectangular co-ordinates.

Let us suppose we have a map of any piece of terrain, and that at some place on this map appear a meridian or north and south line, and a parallel, or east and west line. From the point of crossing of these lines lay off on each a number of points separated by 1000 yards (to scale of the map). Through these points draw across the map lines parallel and perpendicular to the meridian. They will divide the map into a number of squares known as a *grid*, as in Plate 313.

The north and south lines of the grid are numbered from left to right or west to east, and the east and west lines from bottom to top or south to north. The *origin* or zero from which these lines are numbered is always located to the southwest of any point on the map, so that all the reference numbers are *positive* (plus).

Distances from west to east are called the *X* co-ordinates, and from south to north the *Y* co-ordinates. Thus the *grid* or *rectangular co-ordinates* of the point *P* are 184-366. Since there is no danger of misunderstanding they may be written

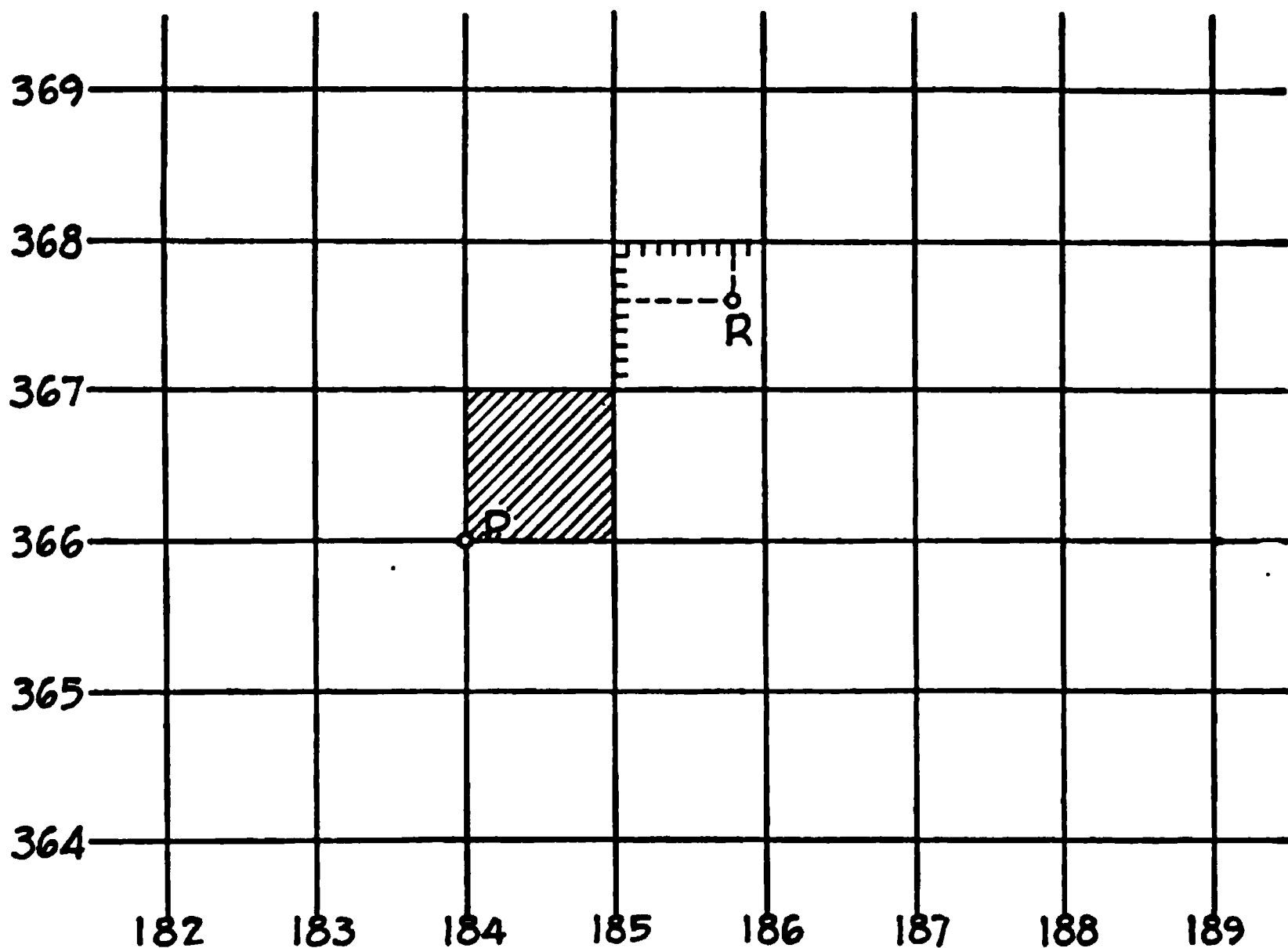


PLATE 313.—Rectangular Co-ordinates.

184366, it being understood that the *X* co-ordinate is always written first, and that each co-ordinate contains the same number of figures. Since the figures 18 occur in all *X* co-ordinates and 36 in all *Y* co-ordinates on this sheet, the point *P* is identified by the last figures of its co-ordinates as 4-6 or 46. This might not be the case on some other sheet.

The co-ordinates of the point *P* are also those of the square (cross-hatched) to the *northeast*, and any square is thus identified by the co-ordinates of its *southwest corner*. Thus the point *R* lies in the square 185-367, which may be written 185367 or simply 57. To locate the point *R* more accurately let us assume that the sides of the squares are further subdivided into 10 equal parts of 100 yards. Then it is seen that the point *R* is 8 subdivisions east and 6 subdivisions north of the southwest corner of the square in which it lies. Its co-ordinates may now be written 185.8-367.6, or 5.8-7.6, or, omitting the decimal point and dash, 5876. The sides of the squares may be further subdivided into 100 or even 1000 parts, and the point thus located to the nearest yard.

The squares of this map are 1000 yards on a side and the co-ordinates 5.8-7.6 indicate that the point *R* is 800 yards east and 600 yards north of the southwest corner of the square 5-7.

Because of their limited areas the grid system is not used for military sketches.

A very rough system of rectangular co-ordinates for the approximate location of points, is provided by dividing the edges of the map into a number of equal spaces, lettered on the east and west borders and numbered on the north and south borders. A point located as 6D for example, would be one approximately opposite "6" on the upper (or lower) border of the map, and D on the right (or left) border.

According to our new standards the grids will be 1000 yd. squares for maps on a scale of 1:20,000 and 5000 yd. squares for maps on a scale of 1:62,500.

CONVENTIONAL SIGNS.

The many features, natural and artificial, which occur on the ground, are represented on the map by symbols known as *conventional signs*. To read a map accurately and rapidly one must know these signs.

Generally these signs roughly resemble or at least give a suggestion of the objects they represent. But they have not been thoroughly standardized and hence are different on maps by different governments and different agencies. The conventional signs employed by all bureaus of the U. S. Government have been standardized by the U. S. Geographic Board, and are published in a little pamphlet entitled, "Conventional Signs" issued by the War Department. They are used on nearly all government maps of fairly recent date (since about 1912). In addition to the signs, many maps are printed in colors: For example, water in blue, vegetation in green, buildings, and railroads in black, contours in brown, important roads in red.

The more usual symbols, such as roads, railroads, buildings in general, woods, streams, contours, are the same or nearly the same on all maps, are soon learned and easily recognized by the student. The more unusual features are often described by short notes or their names placed near them. (See Plate 314.) This may be done on maps of large scale, and on small scale maps such unusual features would usually be omitted, or placed in the general class to which they belong, as in the case of buildings for various purposes.

Conventional signs are not drawn to any scale, even on large scale maps. Their size is determined by the scale of the map and the necessity for catching the eye of the reader. Thus, on a scale of 3" equal 1 mile, all roads, whatever their actual width, are shown as about 1/16-inch wide. On a scale of 6" equal 1 mile they are shown 1/10 of an inch wide. While this is far greater than the actual width of the roads on such scales, any lesser width would be difficult to draw and would not stand out clearly nor be readily seen.

As the scale of the map decreases the symbols become fewer and fewer in number and more and more conventionalized until, on a very small scale map, roads, railroads and streams are merely lines of different weights or colors, cities and towns mere circles or dots, and practically everything else disappears entirely.

The conventional signs for the various *routes of travel or communication* (roads, railroads, canals, telegraph lines, etc.) should be familiar to the map reader, as these features are always of great military importance, and usually shown on all military maps, even those of relatively small scale. On maps of water areas, wharves, docks, buoys and other aids to navigation, are shown by conventional signs.

The conventional signs for military sketches are much fewer in number and simpler in appearance than those on printed maps. The sketcher has not time to make elaborate symbols. Also his symbols should not clutter his sketch and obscure important features. The more common features only are symbolized. Unusual features which are of military importance, may be indicated by notes on the sketch.

A number of the conventional signs commonly employed in military sketching are shown in Plate 314. They are drawn to about the size in which they would appear on a sketch to scale of 6" equal 1 mile, the usual scale for position or area sketches.

The best way to study conventional signs is on the map. It is a good mental exercise to discover what the various symbols represent, and they are thus more

strongly impressed on the mind than when seen in a pamphlet. Also in this manner the student will discover which are the signs most commonly used, and with which he should therefore be especially familiar. In case of doubt look at the pamphlet.

Contours are a form of conventional sign used to show ground forms. They are sufficiently important for special discussion later.

	Single track railroad.		Orchard.
	Double track railroad.		Cultivated land.
	Good road, not fenced.		Standing crops.
	Good road with plain wire fence on one side and barbed wire on the other.		Stream less than 15 ft. wide with tributaries and trees.
	Good road with hedge on one side and telegraph line on the other.		Stream more than 15 ft. wide
	Good road with cut (or fill) and steel truss bridge, 30 ft. long. 16 ft. roadway, 8 ft. above water.		Arroyo or gulley.
	Poor (unimproved) road.		Masonry and frame buildings.
	Trail or path.		Frame school-house, courthouse and church.
	Barbed wire fence.		Grass land.
	Smooth wire fence.		Marsh.
	Hedge.		Wire entanglement.
	Stone wall.		Demolition.
	Telegraph line across country.		
	Good road with truss and suspension bridges and ford 3 ft. deep.		
	Open woods.		
	Woods with undergrowth.		
	Outline of wooded area.		
	Rough symbol for trees.		

PLATE 314.—Conventional Signs Used in Military Sketching.

The features on a map are classed as *natural* and *artificial*. Artificial features are of course the work of man.

The military profession employs a great number of conventional signs which do not appear on ordinary maps. These include trenches, obstacles and other defenses, gun positions, troops of all kinds, depots and dumps, parks and repair shops, headquarters of units, and a great variety of other establishments. These symbols up to the present time have not been standardized. They may be seen on maps used during the war. Military establishments are often shown by *overprinting* them in *colors* on the map. Our own works are in *blue*, the enemy's works in *red*.

ELEVATION.

Ground forms. We have thus far considered the various features represented on a map only in their horizontal relation to each other. But a map to be a complete description and picture of the ground must give information as to the *heights* or *elevation* of various points, and must depict ground forms as they exist in nature. This is accomplished by figures giving elevations, and by means of conventional signs known as *contours*.

Contours.

A *contour* is an irregular curved line on a map (corresponding to an imaginary line on the ground) joining all points of any given elevation, or a line all points of which are at the same elevation. It is therefore a horizontal line.

To understand this let us start at the seashore. The sea is a level or horizontal surface. Therefore the shore line is a contour because all points on it are at the same elevation—sea level. Now let us suppose the level of the sea raised, say 5 feet. The water would rush inland, passing into the valley and up the slopes of the hills until it finally came to rest on a *new* shore line. This also would be a contour, as was the old shore line, and it would be a *vertical interval* (V. I.) of 5 feet above the first shore line or contour. If we continued to raise the sea level 5 feet at a time, and to mark on the ground the successive shore lines, we should, on reaching the tops of the mountains, have the entire continent accurately contoured. A map on a plane sheet, showing these contours in their correct horizontal positions, with each contour numbered according to its height above the original sea level, would be a contoured or topographical map. From this map the ground forms could be reproduced in miniature, forming a *relief map*, which represents ground forms in their true shape.

Characteristics of contours. Let us now look into some of the characteristics of these curves called contours, as an aid in map reading. (See Plate 315.)

1. Every contour is a continuous closed curve. For a contour is the shore line of an imaginary sea, and we know that the shore line is continuous. If a man walked along the seashore and kept going he would return to the same spot from which he had started. Of course the contour may not close within the limits of the map. In that case the two ends both pass off the map and meet somewhere beyond. A small closed contour indicates either a hilltop or a depression with no outlet. In the latter case there will often be water in it.

2. There may be any number of separate contours of the same elevation, but each will be a continuous closed curve. An island off the coast has a shore line, at the same elevation as, but entirely separate from the shore line of the continent. But the island shore line is a closed curve passing clear around the island.

3. Contours never touch or cross each other. For if they did we would have two different elevations for the same point, which is impossible. There are two apparent exceptions to this rule, which are a vertical and an overhanging cliff. In the former case the *map* contours are on top of each other. In the latter the higher contours actually cross over and pass outside of all lower contours. It is to be remembered, of course, that the contours on the map are merely the *horizontal projections* of the contours on the ground. The latter never cross. However, to avoid the appearance of an impossible situation, cliff contours are not drawn on the map. The contours are drawn to the ends of the cliff until they have approached very close to each other, and the steep portion of the cliff is indicated by shading.

4. Hill and valley contours go in pairs, or rather the same contour is encountered twice, once in going up the hill (or down the valley) and again, at the same level, in going down the hill (or up the valley) on the other side of the crest (or stream).

5. The spacing of the contours indicates the steepness of the slope of the ground. The closer together the contours, that is, the less the horizontal distance for the same rise, the steeper the slope. Uniformly spaced contours indicate a uniform

slope. A *convex* hill or ridge is characterized by contours farther apart at the top and closer together at the bottom. For a *concave* slope the reverse is the case.

6. Valley contours are usually characterized by a *V* shape, the point of the *V* being at the place where the contour crosses the stream line at the bottom of the valley. Hill or ridge contours are usually characterized by a *U* shape, the point of the *U* being at the place where the contour crosses the watershed line of the hill or ridge. The points of the *V*'s are *upstream* and those of the *U*'s are *downhill*. Hills and valleys are thus usually distinguishable from each other by the characteristic

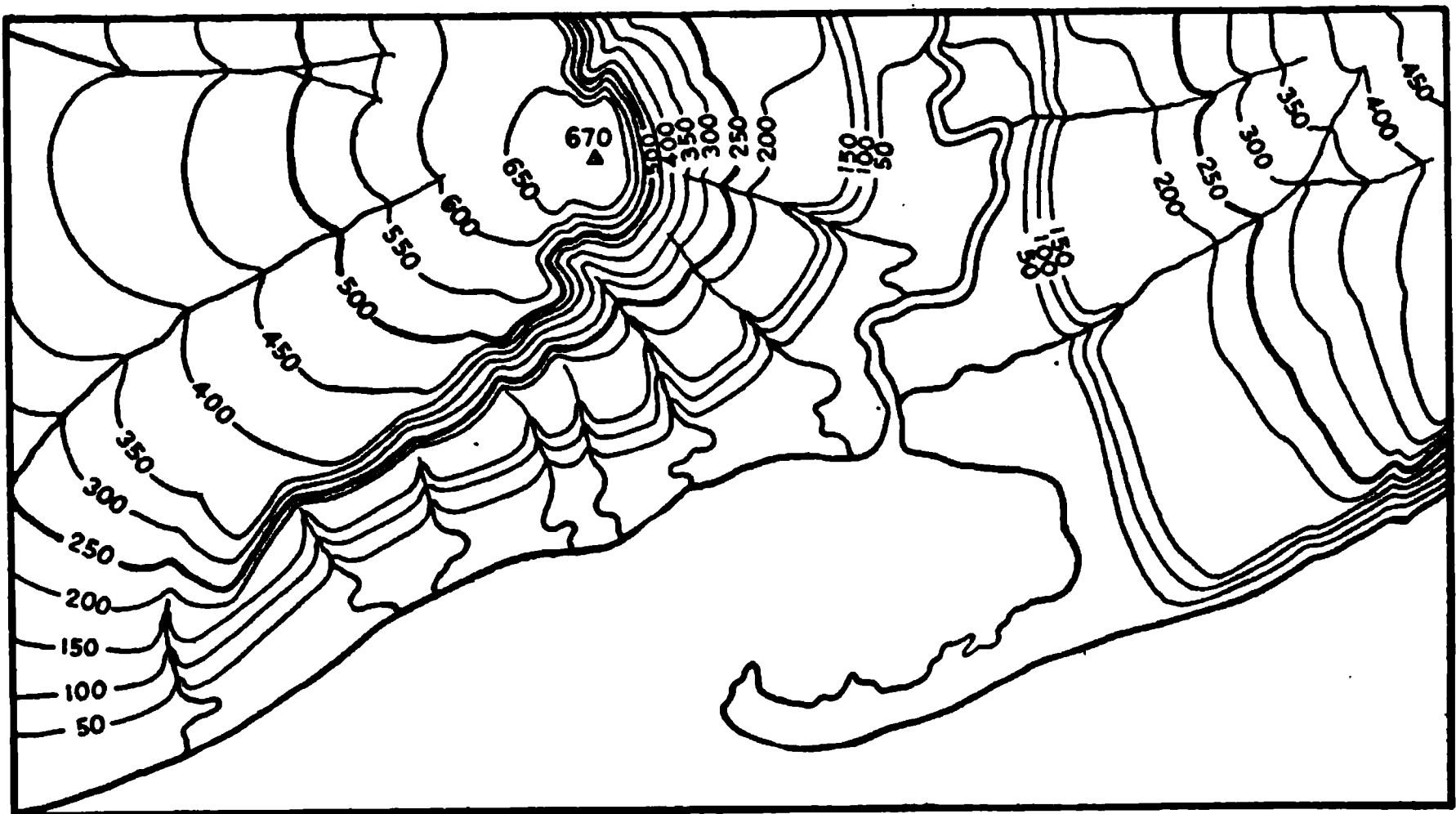
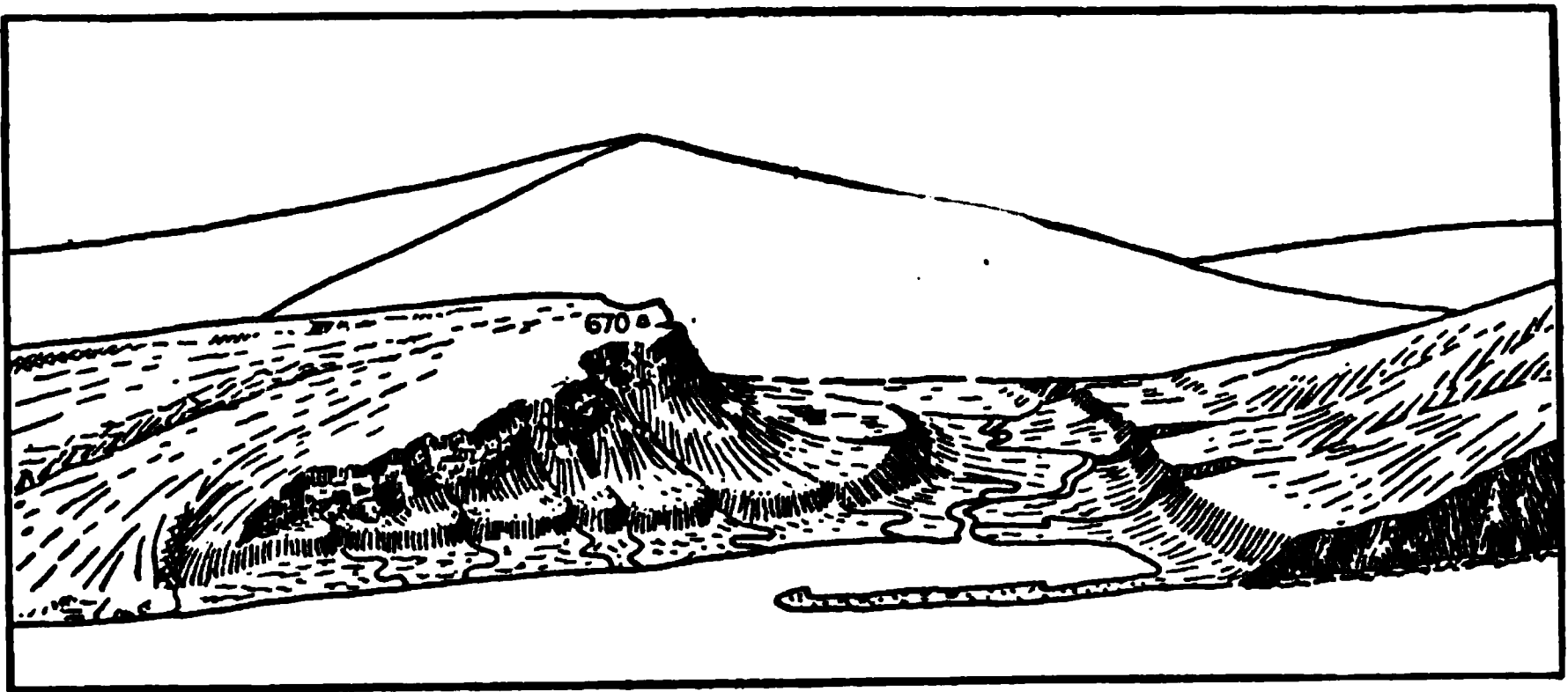


PLATE 315.—Ground Forms and Contours.

shapes (*U* and *V* shaped) of their contours, even if the heights of the contours be not known. If there be any doubt see the reference numbers, and it will be found that the higher contour lies *outside* the lower in the valley and *inside* it on the hills.

7. Adjacent contours usually resemble each other, that is to say they are roughly parallel. Violent changes in the contour of the ground are unusual, but do occur in mountainous country. Changes in the form of the ground usually occur gradually, as indicated by adjacent contours bearing at least a rough resemblance to each other.

It is of little use for the student to attempt to memorize the foregoing rules. The truth of them should be verified by study of the map, when they will be better impressed on his mind. Characteristic contours are shown in Plate 315.

Vertical interval. Datum. The *vertical interval* (V. I.) between adjacent contours is a constant on any one map. On American maps the V. I. is usually 5 feet or some multiple thereof. The vertical interval appropriate to any map is that which will properly portray the ground forms to the scale of the map. The smaller the scale and the more diversified the terrain, the greater should be the vertical interval.

All elevations are measured above an assumed horizontal surface, known as the *datum* or *datum plane*. The exact position of the datum is a matter of no great importance on any one map, inasmuch as it is the *relative* rather than the absolute heights which are important. For the sake of uniformity the assumed datum for most maps is *mean sea level*, which is an unvarying horizontal surface. In sketching it is *desirable* to use the same datum in order that sketches of different areas may be comparable with each other and with maps of the general locality. A datum plane should be below any point on the map or sketch in order that no contours may have a negative (minus) reference.

The *reference number* of a contour is its height above the datum. It is written in gaps in the contour sufficiently often to enable its height to be readily identified. Also as a further aid every fourth or fifth contour may be drawn in a heavier line. Thus, if the contour interval be 5 feet, the 20, 40, 60 and 80 foot contours may be made heavy. Areas of different heights may be in different colors; for example, all areas of less than 100 feet elevation green, from 100 to 500 feet cream, from 500 to 1000 buff, from 1000 to 2000 dark buff, etc.

The heights of hill tops are frequently indicated by figures, which mean feet (elevations are always measured in feet). Hills are often identified by these figures, as "Hill 204."

A *watershed* or *divide* is a crest line on the two sides of which the rainfall flows away in opposite directions. On the American continent there are two great areas separated by a *continental divide*. All rivers which rise east of this divide empty into the Atlantic Ocean, and those which rise to the west empty into the Pacific. A watershed is the reverse of a stream. If the terrain should be turned upside down all streams would become watersheds.

Depth curves in water areas are submarine or subaqueous contours. They are for the benefit of navigators, and are usually measured *downward* from mean low water. The unit of measure may be feet or fathoms. A fathom is 6 feet.

Ground Slopes.

The *slope* of the ground at any point is the angle between the ground and the level or horizontal. Uniform slopes are rare in nature. It is seldom that a straight line between any two points will coincide with the ground throughout its length except on an artificial slope. When we speak of the slope of the ground between any two points it is to be understood that the *average* slope is meant. Road and railroad slopes are called *grades*.

A slope may be expressed in *percentage*, or in *degrees*, or as a *gradient*. The per cent of slope is the number of feet of vertical rise (or fall) in a horizontal distance of 100 feet. Thus if *A* is 100 feet from *B* (horizontally) and 10 feet above it (vertically) the *average* slope from *B* to *A* is *plus* 10% (uphill) and from *A* to *B* *minus* 10% (downhill). The slope may also be expressed in degrees.

The following table gives percentage in degrees and degrees in percentage for ordinary slopes:

1° equals 1.75%	2% equal 1° 10'
2° equal 3.5%	4% equal 2° 20'
3° equal 5.25%	6% equal 3° 25'
4° equal 7%	8% equal 4° 35'
5° equal 8.75%	10% equal 5° 40'
6° equal 10.5%	12% equal 6° 50'
7° equal 12.25%	14% equal 8°
8° equal 14%	16% equal 9° 10'
9° equal 15.75%	18% equal 10° 10'
10° equal 17.5%	20% equal 11° 20'
11° equal 19.5%	22% equal 12° 20'
12° equal 21.25%	24% equal 13° 30'
	100% equal 45°

Per cent to nearest $\frac{1}{4}$, degrees to nearest 10'.

Very steep slopes, such as the sides of trenches, are expressed in *gradients*, or as a fraction in which the numerator is the vertical rise and the denominator the corresponding horizontal run, in any unit of measurement. Thus if the side of the trench rises 4 feet in a horizontal run of 1 foot the gradient is 4/1, expressed as "4 on 1."

From a correct contoured map the average ground slope between any two points may be obtained. Thus if the distance between *A* and *B* is 300 yards and their difference of elevation as shown by the contours is 45 feet, the slope, expressed as a gradient, is $45/300 \times 3$ equals $45/9000$ equals $1/20$. Expressed as a per cent it is $5/100$ or 5%, and the degree of slope (from the table) is approximately 2° 50'.

Slopes and grades are of military importance as affecting the operations of troops. The practicability of various slopes, for various movements should be known.

2 to	3%	Maximum for railroads.
	5%	Maximum for interurban electric lines.
5 to	6%	Usual Maximum for main roads.
8 to	10%	Encountered on secondary roads. Practicable for all military transport. Difficult for cavalry to descend at a gallop.
	12%	Cavalry can descend at trot.
12 to	14%	Practicable limit for heavily loaded vehicles.
	16%	Practicable limit for field artillery, animal drawn.
	25%	Light vehicles can negotiate. Awkward for infantry to descend.
	35%	Practicable limit for pack transport.
	50%	Individual men or animals can ascend.
	100%	Infantry alone can negotiate with aid of hands.

The average slope between any two points on the map is obtained by dividing the difference in elevation of the two points (as shown by the contours), by the horizontal distance between the points. Thus if *A* is on the 980 ft. contour and *B* on the 860 ft. contour, and the distance between them is 1600 ft., the average slope is

$$\frac{980 - 860}{1600} = \frac{120}{1600} = \frac{7.5}{100} = 7\frac{1}{2}\%.$$

If a slope is nearly uniform it may be determined by measuring the horizontal distance (on the map) between two adjacent contours by means of a "slope scale." The distances between adjacent contours for any map on any scale and for any slope are given by the following formulas:

$$\frac{VI \times 1200 \times RF}{P} = MD \text{ (for slopes in per cent).}$$

$$\frac{VI \times 688 \times RF}{A} = MD \text{ (for slopes in degrees).}$$

In these formulas

VI=vertical interval between contours in feet,

RF=representative fraction (scale) of map,

P=slope in per cent,

A=slope in degrees.

MD=map distance between adjacent contours in inches.

Scales of map distances for various slopes are often placed on maps for military use.

Relief maps. The best understanding of the nature of ground forms and of the characteristics of contours is afforded by what is known as a *relief map*. This is a model to scale, in wax, sand, clay, plaster, or papier maché, of the ground as it actually exists. In order to bring out the ground forms more clearly it is usual to *exaggerate* the vertical scale, that is to make it relatively larger than the horizontal scale in the proportion, for example, of 5 to 1 or 10 to 1. This causes the miniature hills of the relief map to appear higher, its slopes steeper and its valleys deeper than those of the terrain it represents. If now the contours be traced on this map a very graphic representation results. The characteristics of contours, and the reasons therefor, are made perfectly clear.

The sand table is the type of relief map most commonly used in the instruction of the R. O. T. C.

Profiles.

A *profile* or cross-section is a line cut from the ground surface or from an imaginary relief map, by a vertical plane. A profile along any line may be constructed

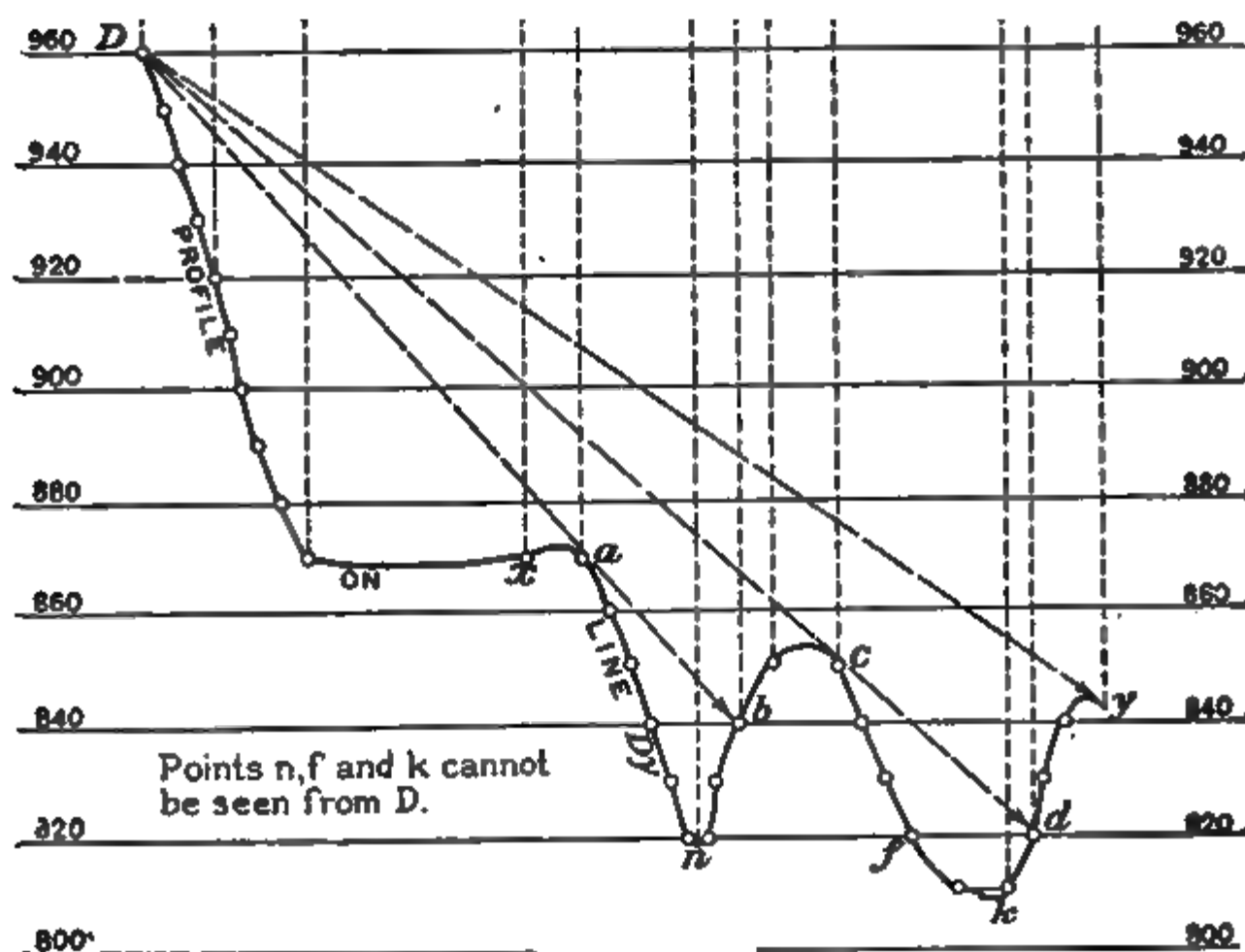


PLATE 316—Construction of a Profile.

from a contoured map. As in the case of relief maps the vertical scale of a profile is usually exaggerated, that is, made relatively greater than the horizontal. The vertical scale should not be a mere multiple of the horizontal scale, but one convenient for use. For example, horizontal scale 12 in.=1 mile, vertical scale 1 in.=50 feet.

What is meant by a profile and the manner in which it is made from a contoured map, is shown in Plate 316. The upper part of the figure is part of a contoured map. The lower part is a profile on the line *Dy*.

Having drawn the line *Dy* cutting the contours as shown, find the references (heights) of the highest and lowest contours cut by the line *Dy*. In this case they are 960 ft. and 810 ft. On a sheet of paper rule a number of equi-distant lines, the distance between lines being a contour interval or two contour intervals on whatever vertical scale is desired (in this case $\frac{7}{8}$ of an inch=20 ft.). Number these lines with the heights. Pin this sheet of paper below the map, with its lines parallel to the line *Dy* on the map. From each point where the line *Dy* cuts a contour, drop a perpendicular to the lines below and prolong it until its lower end is at the same elevation as the contour. Thus the line *CC*, from a point where *Dy* cuts the 850 ft. contour, establishes the point *C* (lower) at 850 ft. elevation on the profile. Join all the points thus determined by the irregular line. This will be the profile on the line *Dy*, with its vertical scale greatly exaggerated.

The use of profiles in solving "visibility problems" is explained later.

Data Which Should Appear on a Complete Map.

It is well at this point to list the features that should appear on and the information that should be given by a good map for military purposes. In general this should be *all the information of military value appropriate to the scale of the map*. But in order to avoid burdening any one map with too much detail, very special information, such as geological data, is usually displayed on maps *compiled* (but not specially surveyed) for that purpose. A topographical military map should give information of *tactical* and *strategical* value as distinguished from the technical information usually shown on special maps.

Every topographical map for military use should give the following general information:

1. Dates of survey and latest corrections or additions.
2. Name of the bureau or department, and usually also the names of individuals who are responsible for the accuracy and completeness of the map.
3. Methods employed in the survey, both for control and detail, as indicating the accuracy of the map. Sometimes the degree of accuracy, or "probable error," is stated.
4. Usual names of all the localities represented.
5. The representative fraction of the map, and a graphical reading scale.
6. The datum plane and vertical or contour interval.
7. The true and magnetic meridians and the amount of the magnetic declination.
8. The limiting latitudes and longitudes of the area covered by the map.
9. A grid system to permit rapid location of points.
10. If the map is one of a series covering a larger area this fact should be noted on the map.
11. Name of the printing plant in which the map was produced, and of the bureau from which additional copies may be obtained.
12. Signature and title of responsible officer who authorized the publication of the map—except when it is issued by one of the well-known mapping bureaus.

The information of military value which should be accurately given on a good map for tactical use includes the following specially important items:

Routes of travel and transport. All navigable streams, canals, roads, railroads, trails and paths should be shown, and essential information concerning them given in notes. Railroad yards, stations and sidings, should be located. Single or double

track, steam or electric traction. For roads, the width, nature of paving (if any), strength and condition of bridges, grades, etc. Fords, ferries and landings (in navigable streams) are of importance. Where routes run off the map their destination or the next important station on the route, should be noted. The vulnerable points of the routes should be indicated—deep cuts and high fills, important bridges and tunnels.

Lines of communication. The chief of these are telegraph and telephone lines. Their important stations and the places to which they lead should be shown.

Cover and shelter. All features which afford shelter from view or fire or from the weather, are of military importance. They include hill slopes, woods, towns and isolated buildings or groups of buildings. The nature of woods, dense or open, deciduous or evergreen, should be noted. The number of inhabitants and the nature of the industries will indicate the amount of shelter to be found in a town.

Obstacles. All features which might interfere with the movement of troops are of importance. They include streams, marshes, woods (especially with undergrowth), very hilly or broken ground, fences, etc.

Water supply. All sources of water supply should be indicated. They include running streams, lakes, and wells. Local water works, such as reservoirs, dams, pumping plants, tanks, distribution systems are of importance.

Towns. The general nature of the buildings should be shown, if the scale of the map is large enough. Large and important buildings of any kind are separately indicated. The supplies of all kinds available should be ascertained. They are approximately indicated by the number of inhabitants, which should be noted on the sketch.

Agriculture and manufacture. Mineral resources. The nature and volume of the principal crops, the output of important factories, mines, oil wells, etc., are of importance as affecting the question of supply.

Landmarks. Prominent landmarks are of special value for purposes of travel, tactical operations and other activities.

The configuration of the terrain. This has its influence on every military activity. It is shown by contours. In addition to contours the elevations of hill tops and of certain important points, such as road junctions, should be indicated by numbers giving their height in feet. Hills and road junctions are often designated by these heights, as "Hill 203," "Road Junction 165."

Visibility of Points and Areas.

A very important problem which the military man may be called on to solve from a map is the "visibility problem," or whether a certain point or a certain area is visible from some other definite point. This problem is solved by means of a profile. Thus, in Plate 316 is y visible from D ? Construct the profile as shown. On the profile draw the straight line Dy . This is the line of sight from D to y , and y is visible from D , because the line of sight is everywhere above or clear of the ground. Is the point n visible from D ? No, because a straight line from D to n would strike the ground *between* D and n (near x).

The skilful map reader can solve such problems without making a profile, or by a *mental* profile. To illustrate this let us ask again, is y visible from D ? Draw the line Dy *on the map*. The elevation of D as shown by the contours is 960 ft. That of y is 845 ft., or 115 ft. lower. From D towards y the ground at first goes rapidly down, but it rises again at x . Does the ground at x interfere with view? The point x is very roughly half the distance from D to y . Its height as shown by the contours, is about 870 ft. The line of sight drops uniformly from 960 ft. at D to 845 ft. at y . Half way between it will have dropped half the difference or 60 ft. (about) and will be at an elevation of $960 - 60 = 900$ ft. near x . Hence it is well above the ground near x , which is only 870 ft. high, and hence the ground does not interfere with view. Similarly it may be determined that the high ground near c does not interfere with the view.

Use of rubber band in solving visibility problems. The most rapid method of solving visibility problems (which cannot be solved mentally) is by the use of a graduated rubber band. The band should be of red rubber with black graduations at any convenient interval, the numbers on the band being the same as those of the contours of the map with which it is to be used.

Referring now to Plate 317, is *B* visible from *A*? By inspection we see that the critical points which may interfere with view are the high points *X* and *Y*. The elevation of *A* is 70 and of *B* 20. Stretch the rubber band from *A* to *B* so that the 70 mark is at *A* and the 20 at *B*. Then the reading on the band at any point will be the height of the line of sight at that point. At *Y* it is more than 30 ft. and at *X*

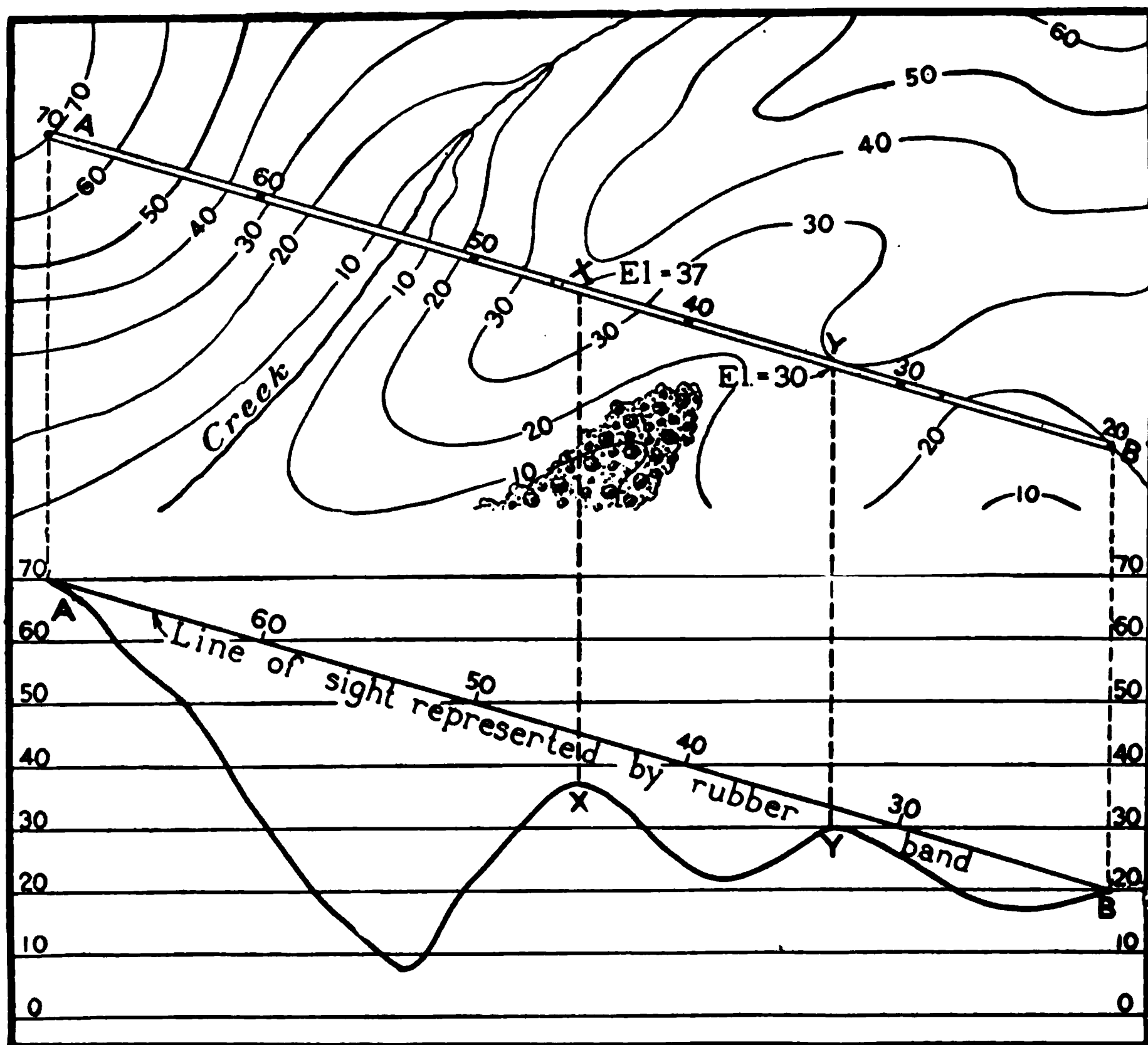


PLATE 317.—Use of Rubber Band in the Solution of Visibility Problems.

more than 40 ft. Hence at both these points it is higher than the ground, as shown by the contours. Hence *A* and *B* are mutually visible, each from each.

If the observer is standing, so that his eye is some 5 ft. above ground, or if there are trees or buildings on the line of sight, these facts must be taken into consideration.

To determine the *areas* visible to the front from a point *A* on the map: Draw a series of straight lines radiating from *A*. Construct on each a profile. On each profile determine the points separating visible from invisible areas (Plate 318). Join the points thus determined by continuous lines. These lines are the boundaries

separating the visible from the invisible areas. The latter may then be lightly cross-hatched or tinted in color. It is not necessary to actually construct *all* the profiles on the lines radiating from *A*. The hilltops and crests are the critical points, and the bottoms of valleys, are usually certainly visible or certainly invisible.



Profile on line A_c .

PLATE 318.—Visibility of Areas.

Visibility by relief maps. A relief map allows of the direct solution of visibility problems. Suppose it be desired to determine the visibility from a point *A*. Attach one end of a thread at *A* by a pin or tack. Stretch the thread taut to any other point *B*. If the taut thread clears the intervening terrain at all points, *B* is visible from *A*. If not, the ridge which interferes with view is at once evident. The solution of the problem of area visibility is particularly easy and interesting on a relief map. Place a miniature electric light at *A*. All areas visible from *A* will be illuminated, all invisible areas will be in the shade. If there is an observation tower at *A*, raise the light vertically to the proper height of the tower, on the vertical scale of the relief map. The areas visible from an aeroplane or observation balloon in any locality and at any height, are as readily determined by the use of the miniature light.

The points and areas visible and invisible both from our own and the enemy's observation posts are of military importance in determining the probable localities in which troops and establishments of various kinds are or may be concealed, and the points from which such localities may be seen.

THE MAP AND COMPASS AS GUIDES IN FOLLOWING A ROUTE.

One of the most important uses of maps in military operations, perhaps the most important use made of them by non-commissioned officers and junior officers, is in picking and following routes of travel. A non-commissioned officer taking out a patrol, or a platoon leader in battle, must know *where he is* and *whither he is going*. Patrols often become lost and fail to accomplish their mission, and many attacks go wrong because subordinate leaders lose their direction or location. The properly trained soldier uses his map in connection with his compass, as a guide for his movement.

We have seen what a map is. Let us now see what the compass is, and then how these two instruments together are used as guides in moving about in an unfamiliar country.

The Compass.

The military compass is a small, portable instrument for determining *direction* in the field. It can be used to determine or measure azimuths or bearings, to orient a map, etc. It is one of the most important items of equipment of the scout or leader.

Description of the compass. (See Plate 319.) There are many varieties of compass, but the essential feature is the same in all. This is a mag-

PLATE 319.—The Compass.

- A. Sighting line or front sight.
- B. Index mark on case.
- C. Movable index on crystal (luminous).
- D. Rear sight.
- E. Compass card.
- F. Clamp for compass card.
- G. Holding ring.

netized needle balanced on a pivot which, when allowed to swing freely, and not disturbed by the presence of some steel objects, points always towards the *magnetic* north pole. The whole is inclosed in a case, either square or circular, with a glass crystal and a protecting cover or cap of metal, hinged to the case. A clamp is provided, which lifts the needle off its delicate pivot and holds it firmly when not in use. In most compasses the act of closing the metal cap clamps the needle.

The north end of the needle is marked in some distinctive manner.

Graduations are provided to read bearings or azimuths (sometimes both). These are marked on the inside (bottom of the case) or on a card like the face of a watch, which is attached to and swings with the needle.

In a needle compass the azimuth (or bearing) is read on the scale inside the case, under the north end of the needle. In a card compass the azimuth (or bearing) is read on the movable card at the index mark on the inside of the case, under the line of sight.

The compasses used in the army, including the marching, prismatic and lensatic compasses, have additional features, desirable for military use. These may include: A line of sight for more accurate work in the field; a prism or lens for taking readings; a level; a fluid in the case to check excessive oscillation of the needle; and luminous markings for the north end of the needle, an adjustable index point on the case, and the line of sight, very essential for night use.

It is to be remarked at this point that the most complete description of a compass must be hopelessly confusing to an uninstructed man except when read in connection with an examination of the instrument itself. The soldier or student should have a compass, and should familiarize himself with its various parts. Then, and only then, will this preachment on the instrument be understood.

Use of the compass. For use, the compass should be placed on a horizontal surface, a box, table, fence post, on the ground; or held horizontally in the hand or on the knee, so that the needle or card turns freely. Steel objects, such as an automobile or railroad, will disturb the needle. It will point correctly if moved 10 or 12 feet away.

Be sure your compass is reliable, your life may depend upon it sometime. See that all movable parts are snug, but not tight. See that the needle revolves freely, indicating a good pivot and strong magnetization. Test north pointing by comparing with another instrument known to be correct.

The compass is a delicate instrument, and if out of order may be worse than useless. It should be handled carefully, never shaken, struck or dropped. It should never be held or carried in any but a horizontal position unless the needle or card is clamped. Be sure to clamp the needle before placing the compass in the pocket. Never "tease" the instrument by attracting the needle with a piece of steel, this is harmful to its accuracy.

The following instructions apply to compasses having a line of sight and a card attached to the needle, graduated to read bearing and azimuth. All good army compasses are thus equipped.

True and Magnetic North. Magnetic Declination.

We have seen that the north lines on a map point towards the *true* north pole. It is perhaps an unfortunate fact that the compass needle points towards the *magnetic* north pole, which is not in exactly the same place as true north. There are certain localities where the compass *does* point true north (when the true north and magnetic north are in line), but in most places the needle points east or west of true north. The angle between the needle and the north and south line at any place is called the magnetic *variation* or *declination* of that place. (See Plate 322). In the United States this variation may be as much as 23° east or 18° west. But the needle points always in the *same direction* in any general locality, provided the compass is accurate and not disturbed by some steel object too close to it. That is to say there will be no important change in the magnetic declination in moving over several miles of country, and anyway extreme accuracy is not necessary.

The directions (azimuths or bearings) given to scouts or subordinate leaders are always *compass* directions, since they must use their compasses to follow them. Also when a scout reports a certain direction the officer who receives the report must remember that this is a *compass* direction and not a true direction.

In using a map in connection with a compass the fact that the compass north may be as much as 23° off the true north and south line is apt to be confusing. The best way to avoid this confusion is to find out the compass north at any locality, or the angle between compass north and true north. Then place the *compass* north and south line or the *magnetic meridian* on the map. Use this meridian in determining all directions and forget the true meridian printed on the map.

Practical Problems Solved by Map and Compass.

The soldier uses his compass, his map, and the landmarks of the terrain to locate his own position, to identify the things he sees, and to go where he wishes to go, either night or day. Also he must occasionally make little sketches (to send to his commander) to show the positions of things that he reports. (See Scouting and Patrolling). And there will be times when he has no map, or, no map and no compass, and must find his own location and determine directions by other means. So now let us see the various practical problems which he must solve in order to do these things, and just exactly how he goes at them.

1. *To determine the direction of magnetic north on the ground.* Use an accurate compass. Set it up carefully on some horizontal surface allow the needle to come to rest. Turn the case gently until the north end of the needle coincides with the front sight or mark on the case in line with the sights. Look through the sights and select an object on the line, or set a stake. A line from the compass to the stake is the direction of magnetic north.

2. *To determine the direction of true north on the ground.* This may be done with sufficient accuracy for our purposes in several ways, of which the following are suitable:

a. With a map. Pick out on the map some true north and south line joining two definite objects, as far apart as possible. Identify the same line on the ground. If there be no well-defined north and south line on the map, find a well-marked line which is *nearly* north and south. Measure the angle between this line and the meridian *on the map* (see Plate 322). Lay off this line on the ground and measure off the angle between it and the meridian.

b. By the sun. On a level table, erect a post *ac* (Plate 320) 18 inches long for short days (winter) and 24 inches for long days. At the top of the post place a

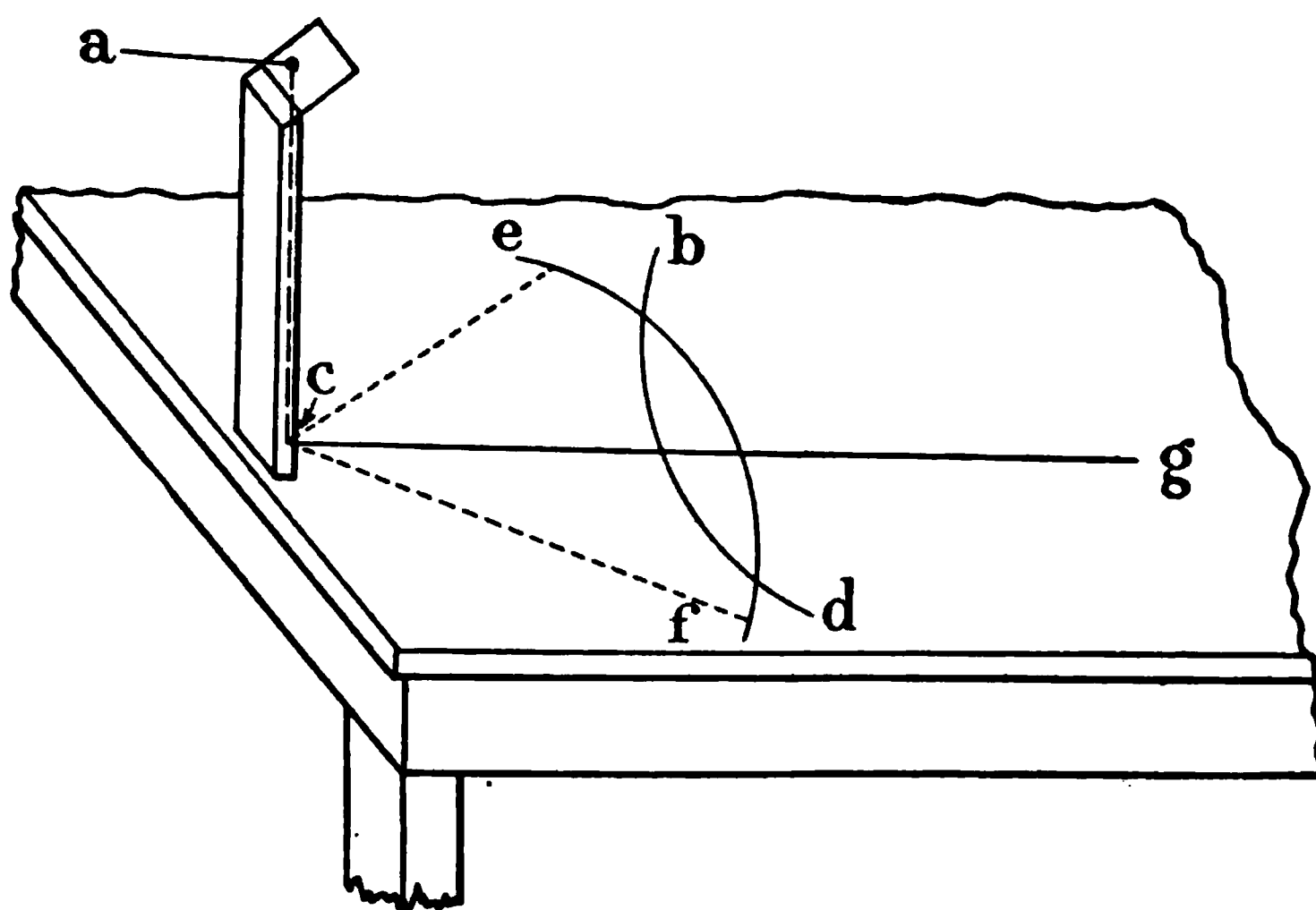


PLATE 320.—Direction by the Sun.

sheet of paper or a piece of tin, having in it a hole, *a*. For about half an hour before and half an hour after noon, mark at intervals of 10 minutes the position of the spot of sunlight from *a*, on the table. Connect these points thus plotted, forming the curve *bd*. From *c*, on the table immediately beneath the hole *a*, strike a circular arc, *ef*, with any radius, intersecting the curve *bd* at *b* and *d*, near the edges of the board. Draw the line *cg*, bisecting the circular arc *bd*. It will be the true meridian.

An approximate determination of true north may be made as follows. Select a tall dead tree, a post, flag-pole or some other thin vertical object. Mark the shadow

of the top at intervals before and after noon. The *shorter* shadow made by the post will point true north.

c. *By the pole star.* The true north pole is on a line joining the pole star (Polaris) with the second star from the end of the handle of the great dipper (Plate 321). Accordingly when this star is directly above or directly below the pole star, the latter is due north of the observer. Drive a stake at the observer's position. Place a man holding a candle (or electric flash light) as far north as he can conveniently be seen. Move him until the candle is directly under the pole star as seen from the stake driven (the eye is very sensitive to verticality). By means of a plumb bob, or by dropping a stone, set a second stake in the ground immediately below the candle. The line established by these two stakes will be the true north and south line, with sufficient accuracy for most military purposes.

As the distance of the pole star from the pole is only a little over 1 degree, no great error will result if this determination of direction be made at any time that the pole star is visible. If the position of the dipper be noted a correction can be applied if desired. The pole star can always be found by remembering that it is in line with the two stars in the outer edge of the handle of the dipper (Plate 321).

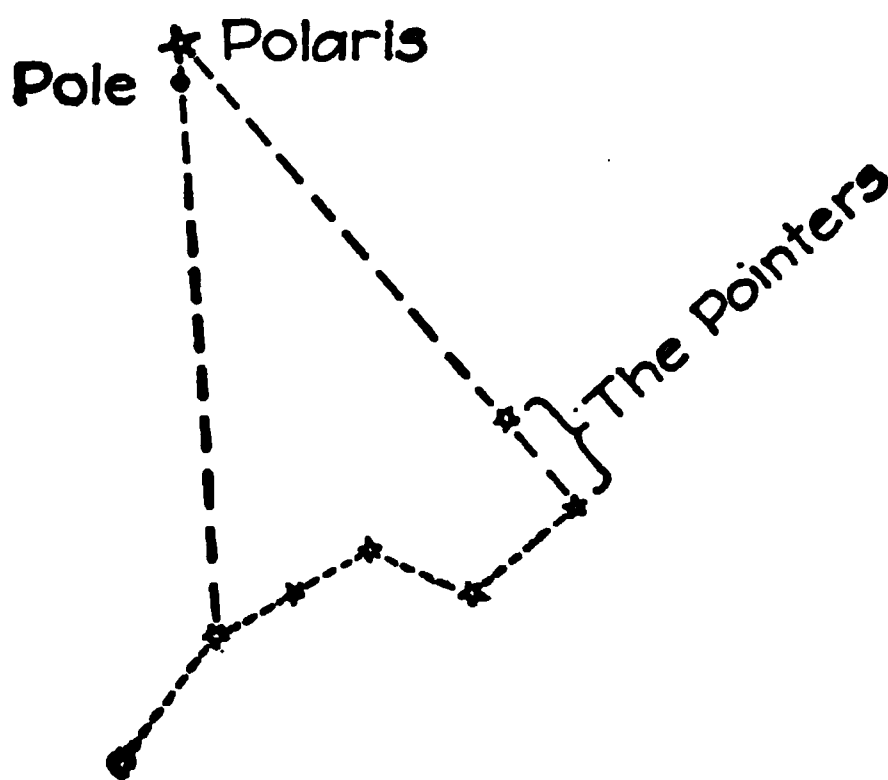


PLATE 321.—Direction by the Pole Star.

called "the pointers." The dipper revolves around the pole, turns upside down, etc., but the pole star can always be found by following the line of the pointers.

d. *By sun and watch.* Place the watch on a level surface. Point the hour hand at the sun. To do this, hold a pencil vertical over the outer end of the hour hand. Turn the watch until the shadow of the pencil falls along the hour hand. A line drawn through the center of the crystal, halfway between the hour hand and XII o'clock will point north and south. East and west are determined by remembering that the sun is in the east in the AM and in the west in the PM.

This method is fairly accurate in the early morning or late afternoon. It is much less accurate near noon. At best it is only an approximation.

3. *To determine the magnetic declination.* This is the angle between the true north and south line and the magnetic north and south line. It may be measured on the map, if this shows both the true and magnetic meridians. Or determine the magnetic meridian as in (1), the true meridian as in (2) and measure the angle between them with the compass as in (5). Be sure to note whether the declination is *east* or *west*.

4. *To orient a map.* This means to place the map so that the north and south line on the map will be pointing in the same direction as the north and south line on the ground. Then all other lines on the map will be parallel to the lines on the ground which they represent.

There are several ways of orienting the map.

a. *When the map shows a magnetic meridian.* Place the compass on the map with its north and south line (or the edge of the box) parallel to the magnetic meridian on the map. Rotate map and compass until the north end of the needle of the compass is at N. on the compass dial. The map is now oriented since its magnetic meridian is parallel to the compass needle. The observer's position need not be known.

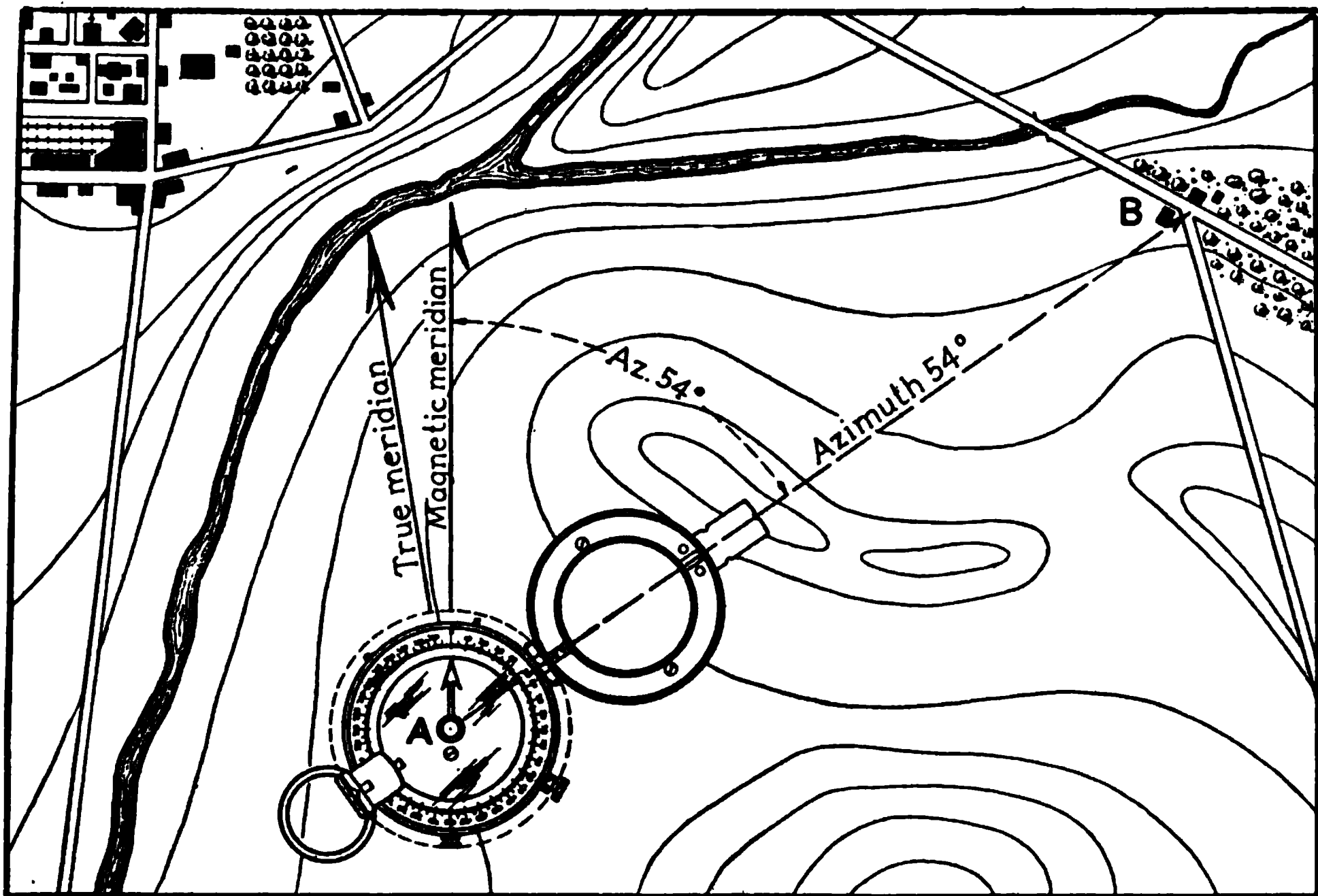


PLATE 322.

b. *When the map shows a true meridian only.* If the magnetic declination is known or can be determined, place the compass as before with its north and south line parallel to the meridian. Rotate map and compass until the compass needle reads the magnetic declination, making sure that it is in the right direction (east or west).

c. *When the map exhibits no meridian or no compass is available.* If the observer can identify any line on the map and also on the terrain, he shifts the map until the map line (a road, for example), is parallel to the ground line which it represents. If no definite line is apparent the observer may often orient his map by noting prominent ground forms in the vicinity (both on the terrain and on the map), and shifting his map until the representations of these forms are in the same relative positions as the actual features on the ground.

d. *When the observer knows his own position on the map, and some other prominent point can be located both on the map and on the ground.* Lay the compass on the map with its line of sight along the line joining the observer's position and the prominent visible point, without disturbing the compass rotate map and compass until the prominent point can be seen through the sights. The map is now oriented since the line from the observer to the prominent point on the map is parallel to the same line on the ground.

5. *To find the azimuth (or bearing) of any object, from the observer's position, on the terrain.* By day. Set up the compass on a level place, unclamp the needle and point the sights at the object. Allow the needle to come to rest. Read the azimuth on the card opposite the index mark on the case, under the front sight. (If it be a needle compass, read the azimuth on the graduated scale at the bottom of the case, exactly under the north point of the needle.)

By night. Proceed as by day. Read the bearing by the aid of a match or flashlight, if practicable. It is impossible to read an azimuth closely at night without an artificial light. If the situation is such that it is not safe to use a light, rotate the movable ring holding the glass crystal, until the luminous mark on the glass is exactly over the luminous north end of the needle, indicated on the card. Again make certain that the sights are pointed at the object whose azimuth is desired. Now carefully clamp the needle, and verify the fact that as clamped the luminous north point is still exactly under the luminous mark on the glass. Carry the compass to a sheltered place (dugout, etc.) where it may be read by artificial light. The azimuth may then be read, without unclamping the needle or card. If it appears that the luminous north point is not directly under the mark on the glass, their relative positions have been disturbed in the act of clamping the needle in the dark. In this case set up the compass, unclamp the card, allow the needle to come to rest, and then rotate the entire case until the north point on the card and the mark on the glass again coincide. The azimuth may then be read at the index point.

If there are several azimuths to be determined, and if the compass cannot be read until the scout (or patrol) has returned to his own lines, it will be necessary to use a separate compass, as described, for each azimuth desired. If there be a clamp for the card, independent of closure of the case, two azimuths may be recorded on one compass, using the luminous mark on the glass for the first and the clamped card for the second.

6. *To lay out a given course from a given point on the terrain.* The compass being set up at the given point: allow the needle to come to rest. Turn the entire case gently until the bearing or azimuth of the given course is at the index mark on the case under the front sight. Look through the sight and pick out one or more prominent distant objects on the line. These will be direction points for the march.

7. *To follow a course by night.* During the day preceding, or by aid of a light, set up the compass. Allow the needle to come to rest. Turn the case gently until the azimuth and bearing of the given course are opposite the mark under the front sight. Holding the case firmly, rotate the movable ring until the luminous mark on the glass is exactly over the north end of the needle. If the needle has vibrated again, allow it to come to rest and correct the error, if any.

The compass is now set for the given course. To follow it by night set up the compass on a horizontal surface or hold in the hand. Turn the entire case until the movable luminous mark coincides with the luminous north end of the needle. The sights (which are also luminous) now indicate the direction of march.

Unless it is possible to pick out some landmark visible by night, this operation must be constantly repeated.

It will generally be possible to see some object in line a short distance away. If not, a man may be sent out on this line. He halts at the limit of visibility and the man with the compass joins him. This operation is then repeated.

8. *To measure a bearing or lay out a direction on the map.* Suppose it be desired to determine the bearing of a point *B* from a point *A*. Draw the line *AB* and through *A* draw a line parallel to the magnetic meridian, putting an arrow at its north end.

Around *A* as a center draw a circle a little larger than the compass case, and use this as a guide in placing the compass with its center at *A*.

Now orient the map as in (4a). Rotate the compass, keeping its center on *A* and without moving the map until a pencil held vertically at *B* is in line with the sights. When the needle comes to rest, read the bearing (azimuth) of *B* from *A* at the mark on the case under the sight.

Suppose it be desired to locate any point *B* having a given bearing from *A*. Draw a magnetic meridian through *A*, place the compass on *A* and orient the map. Turn the compass case as above until the desired bearing is opposite the mark under the sight. Line a pencil with the sights as in preceding paragraph. The point of the pencil is at *B*, and a line *AB* has the desired bearing.

9. *To locate on the map the observer's position on the ground.* Spread out the map and orient it by one of the methods described. Select some prominent feature

of the terrain, such as a road junction, bridge, etc., at or very near the observer's position. Then try to identify the same feature on the map. This will fix the observer's position.

If there be no prominent feature of the terrain near at hand, select two distant prominent and well-defined points which can be identified both on the map and on the terrain. The map being oriented on a level surface, stick pins in the two prominent points, as *r* and *s*, Plate 323. Now using the compass or a triangular

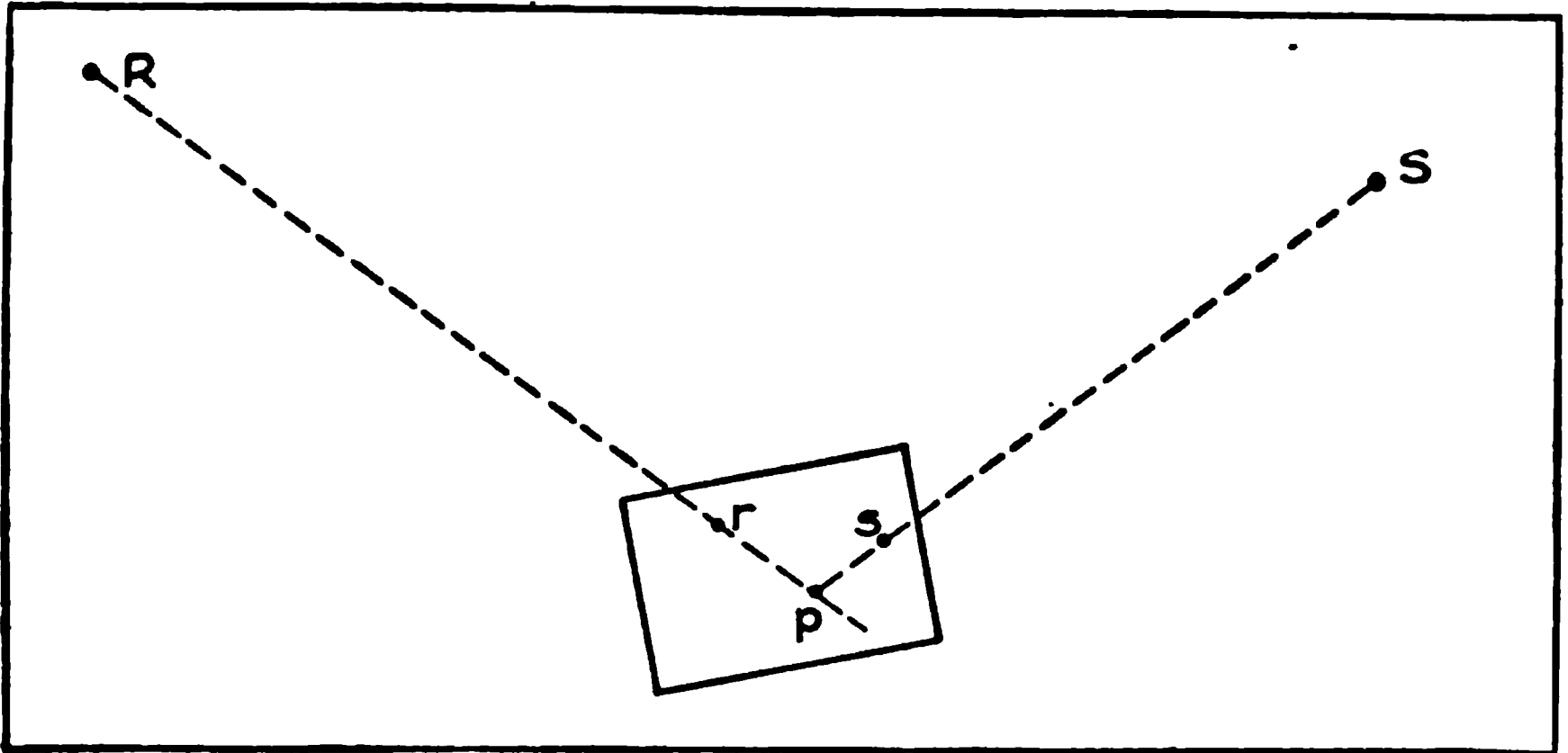


PLATE 323.—Location by Resection.

r and *s* are the plotted position of *R* and *S*. The point *p* is located by resection on *R* and *S*, its plotted position being *P*.

ruler, sight through *r* to the distant point *R*, which it represents, and draw the line *Rr*. In like manner sight through *s* to *S* and draw the line *sS*. The intersection of these two line at *P* will be the observer's position. This operation is called *resection*.

10. *To report the position of any object.* Suppose that a scout discovers a machine gun in the edge of a wood. He wishes to send a sketch to his commander which will enable him to locate the gun. The scout is at no definite locality, but he will be able to find near at hand some prominent feature of the terrain which he is sure is shown on his commander's map, such as the church in Plate 324. He takes the bearings from *his own position* to the church and to the

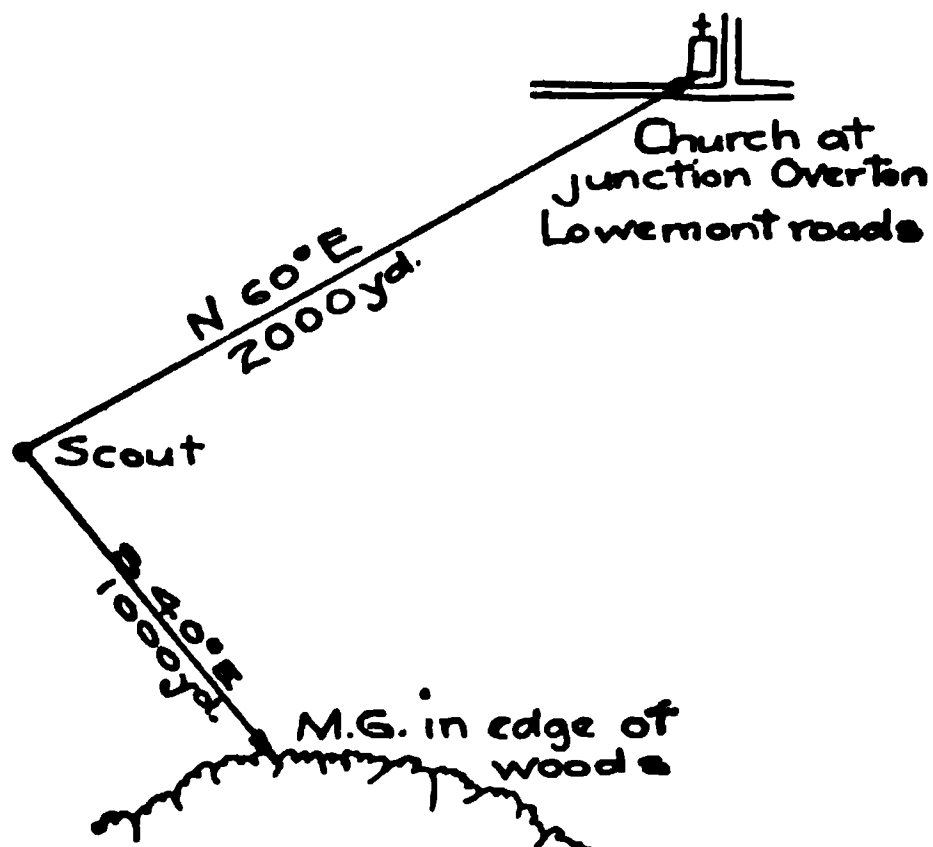


PLATE 324.—A Scout's Report.

machine gun, and estimates the distances. He then prepares a rough sketch, as in Plate 324, which will enable his commander to mark on his map the location of the object reported.

PRACTICAL EXERCISES.

Map reading is altogether a practical art, and the greater part of the time available for instruction should be devoted to practical exercises and problems in map reading. Fortunately such problems are very easily prepared, and the students will enjoy the solution of them.

Whenever possible the problems should be based on a simple military situation in order to impress upon the minds of the students the practical importance of map reading in military operations. In their later training in sketching, scouting and patrolling, musketry and tactics, field fortification and other courses, the students will have further opportunity for the solution of map reading problems.

The exercises may be made *competitive* as to time required to give correct solutions. The students may also be required to suggest problems for others.

The majority of these exercises may be held indoors. But it is to be remembered that a very important use of maps is to locate positions and follow routes on the terrain, both with and without the aid of a compass. Accordingly a number of exercises should be held outdoors with maps of the terrain on which the exercises are given, and should include the use of the compass.

The following is intended merely as an outline or suggestion for a course of practical exercises. The actual problems should be fitted to the maps on hand, and the schedule of exercises should be such that it can be easily completed in the time available.

1. Exhibit to the students a number of maps and sketches of various kinds and on various scales, for various uses. Explain the uses of each. Cause the students to identify the maps and explain their uses.

2. Demonstrate a few simple cases of the use of a scale, and cause the students to solve scale problems. For example:

a. The R. F. of a map is $1/63,360$. What is the scale in yards per inch? Construct a reading scale with extension for such a map.

b. The scale of a map is 200 ft. to 1 inch. What is its R. F.?

c. On a certain map determine distances between various points. Determine the distance by road between two towns, using a slip of paper, dividers, and map measure. How long would a company of infantry require to march this distance?

3. Demonstrate the relation between scale and area, and cause the students to solve a few problems. For example: On a map having a scale of $1:20,000$ the area of a square park is 4 inches. What would be its area on a map having a scale of $1:5000$?

4. Demonstrate what is meant by azimuth and bearing and how they are measured with a protractor. Demonstrate a few simple problems, and cause the students to solve problems. For example:

a. A point *B*, has a bearing of $N\ 14^\circ\ W$ from a point *A*, and is distant 575 yards. Locate on the map the point *B*, using scale and protractor. What is the azimuth of the line *AB*? What are its reverse bearing and back azimuth?

b. The azimuth of a certain line is 286° . In which quadrant does it lie?

c. A certain map shows no meridian. The bearing of a line *AB* is $S\ 40^\circ\ W$. Place an arrow indicating N and S on the map, also an east and west line.

5. Demonstrate the use of rectangular co-ordinates. Cause the students to write the co-ordinates (to two decimal places) of various given points, and to locate various points from given co-ordinates. Cause them to measure the azimuth and distance from *A* to *B*, both points being located by co-ordinates.

6. Point out to the students the more important conventional signs used on topographical maps, and also those used on military sketches. Practice the students in naming the features of the terrain indicated by certain signs, and to point out the signs indicating certain features. Emphasis should be laid on the features of military importance, for example: roads of various classes; railroads, steam and electric, single and double track; bridges of various types; telegraph, telephone and power lines; watercourses; buildings of various classes; woods, deciduous and evergreen; undergrowth; crops; etc.

The students may also be practiced in drawing some of the more important conventional signs, and filling in the symbols on an imaginary terrain.

7. Demonstrate to the students what a contour is, and the various characteristics of contours as outlined in the text. This instruction is best given by means of a relief map *with the contours printed on it*. Other useful exercises are: molding characteristic ground forms (hills with various slopes, ridges, valleys, saddles, etc.) in wax, plaster, sand, etc., and tracing the contours upon them with a stylus, by means of white thread, etc. Another useful exercise is to trace contours on the ground with white twine or tracing tape. The student should then be required to point out the various characteristic forms of nature as indicated by contours.

The instructor may then demonstrate to his students a simple exercise in logical contouring, and if time be available the students may solve a simple problem of this kind.

On a piece of terrain of which maps or sketches are available, cause the students to locate on the ground the various shapes indicated on the map, and to explain their characteristic features.

8. Demonstrate how ground slopes are determined on the map, by calculation and by the use of slope scales. Demonstrate the construction of a slope scale. Cause the students to calculate and measure various slopes on the map, and after a little practice to estimate slopes by eye (without the aid of the slope scale), and to draw rough profiles of various slopes. A very interesting problem in the practical application of slopes is to locate on the map a path leading up a hill or ridge, the path to have a grade of 8%, 10%, etc. Another problem, trace the course of rain falling at a certain point, down the slopes, into the small gulleys and streams and finally to the largest stream. Trace the watershed between two localities.

The students may finally be required to estimate slopes and road grades on the terrain, and to check their estimates with a clinometer. The practicability of slopes for military purposes may be demonstrated on the terrain.

9. The instructor having demonstrated the construction of a profile, as explained in the text, the students should be required to construct profiles on designated lines, using cross-section paper, or sheets ruled in pencil.

10. Exhibit to the students a good topographical map, such as the Geological Survey, and point out the important data and information shown, how and where. Then exhibit a number of maps, including some which are crude and incomplete, and cause the students to check the information shown, and to criticize the faults or omissions.

11. Visibility problems are both valuable and interesting. After thoroughly demonstrating the various ways of solving them, as explained in the text, the instructor should cause the students to solve a number of problems, and to suggest other problems. Such problems should have a military application. The following typical problems are suggested:

- a. Can a scout *standing* at *A* see a hostile scout prone at *B*? If not, why?
- b. How high an observation tower would be required at *A* in order to see *B*?
- c. A scout lies prone at *A*. At what point on the road *CD* would a wagon train traveling south first come into view and when would it again disappear, assuming the tops of the wagons 9 ft. above ground?
- d. There is a hostile observation tower at *A*. A road screen is placed at *B* to conceal the movement of wagons on the road. If the screen is 50 ft. from the road and the wagons are 9 ft. high, how high must the screen be?
- e. What areas to the front are visible to a scout *lying prone* at *A*? If the scout is in a tower 30 ft. above ground what areas could he see?

12. Exhibit to the students one or more of the various types of compass for military use. Explain their essential features, and various attachments, beginning with the simplest form of the instrument. Show how the compass is set up and read. Cause the students to explain the uses of the various parts, and to set up and read the compass.

13. The students having mastered the explanation of true north and of magnetic declination as explained in the text, orient the map in true north and south, place

the compass upon it, determine the magnetic meridian, and measure the declination with the compass itself and with a protractor. Cause the students to perform these operations.

14. Cause the students to solve a number of problems in converting true bearings and azimuths into magnetic bearings and azimuths, and conversely.

15. The instructor should demonstrate and then cause the students to perform the following operations in determining direction *on the ground*. The methods are explained in the text.

a. Determine the direction of magnetic north, with the compass. Demonstrate the effect of local attractions on the compass needle.

b. Determine the direction of true north by the sun, by watch and sun, by the pole-star. Compare the results.

c. Determine the magnetic declination from *a* and *b*.

d. Determine the magnetic bearing of a distant point (*B*), from the observer's position, using the compass.

e. Lay out a given magnetic course from a point *A*, using the compass, and select a landmark for a guide point.

These operations, (*d* and *e*) should be performed both by day and by night.

16. On a diversified terrain, of which maps are available, the instructor should demonstrate and cause the students to perform the following operations in location of position, orientation and direction, using the map, or map and compass. For these exercises the map should be mounted on a plane table or sketching board of the largest size obtainable. Lacking these the map may be placed on top of a large box, or any other suitable level surface.

a. Identify various landmarks and other features of the terrain, on the terrain and on the map. Estimate distances *to* and *between* various features, and *elevations*, and check these estimates on the map.

b. Orient the map by each of the methods described in the text, viz.:

(1) By landmarks or other terrain features alone.

(2) By compass and magnetic meridian on the map.

(3) By true meridian, magnetic declination and the compass.

(4) By the observer's known location, some other prominent point, and the compass.

c. Locate on the map the observer's position on the ground.

(1) By identification of a nearby point.

(2) By resection on two distant prominent points.

17. Demonstrate and cause the students to practice laying out bearings and measuring horizontal angles *on the map with the compass*.

18. Cause the students to prepare simple location sketches, to accompany patrol messages, as described in the text, using the compass for direction, and estimating distances. The estimated distances should be verified by pacing. Then cause other students to plot the reported positions on the map, and finally to verify the locations.

The foregoing is merely an outline for a practical course in map reading. The actual problems given should be *specific* and *definite*, and should have a *military application*. The students should be required to prepare simple problems themselves.

The very important problem of selecting the route of a patrol from a map should be given in the course in Scouting and Patrolling to students who have already been instructed in map reading.

If the students are able to make correct solutions of problems such as those suggested, without the aid of the instructor, *this proves beyond question that they have acquired a practical, working knowledge of map reading*. The exercises should be repeated until all students are able to make these independent solutions. If the time available is short, as will usually be the case, it will be better to limit the practical instruction to a few simple fundamental exercises which the students can thoroughly master, rather than to attempt a more elaborate course at the expense of thoroughness.

MUSKETRY.

INTRODUCTORY REMARKS.

Success in combat depends upon *superiority of fire*.

Musketry is teamwork in the application of infantry fire. The instruction in the use of the infantry platoon weapons given a recruit after his entry into the service is the first step in this instruction. After he becomes proficient in the use of these weapons, we must teach him how to act as a member of a team, and to place his fire power, with that of his comrades, at the disposal of his commander.

We must also teach our officers and non-commissioned officers how to utilize the fire power placed at their disposal. We must teach them how to run the team.

Junior officers, the non-commissioned officers and men of our next great combat army will, like those of our last, be hurriedly and partially trained. For their use we must have a system of musketry which is *simple, definite, single, and well defined*. It must tell them not only what to do, but one, simple, correct method of doing it. It must tell them definitely exactly how to perform each part of their task in order to develop the required progress and efficiency.

The members of each squad must know definitely that the squad is a fire unit—that their mission is to smother the target with fire—that by doing so they are playing the game, and doing their part as an element in the platoon team—that they are carrying out the platoon leader's plan. Private Jones must know that he is to traverse his fire over the entire target, Private Black, 5 yards to the left of the corporal, must know that he is to traverse the fire of his automatic rifle over the entire target. The section leader must know that each squad is doing this. He must know that if he advances one squad, the other two squads are still covering the whole target. Corporal Brown of the left squad must know that if he ceases fire and moves his squad to a better firing position, his movement will be covered by the fire of the remaining two squads. Each man and each unit can know these things only if they are trained as a team to work in just one way.

One man or one small fire unit can accomplish but one mission at a time. Each man and each unit must know what that mission is. Each must know definitely how to accomplish it. The simpler the mission the greater the chance for success. If each knows his mission and has one definite method to guide him in carrying it out, his own initiative will direct his skill and effort so that each will act as a well trained unit of the team. Teamwork in the application of fire is musketry. With our wide deployments, personal direction by leaders is difficult and at times almost impossible. Intelligent teamwork is indispensable. We secure that teamwork: First, by carefully training the individuals and units in ONE DEFINITE, SIMPLE system of action. Second, by giving each a definite mission, which their knowledge, training, and the spirit of playing the game will enable them to fulfill.

In this course we will cover the elements of this system of training in the following order:

1st. Explanation and demonstration.

2nd. Practice.

3rd. Examination or test.

Each step depends upon the preceding step. Each having been covered must be constantly reviewed.

MUSKETRY.

Fire and movement in the attack. Section reducing hostile resistance. Note small group moving forward on left under covering fire of balance of section.

After the elements of musketry training are mastered, the units must apply the principles they have been taught to concrete cases in the field.

This is done by combat practice. The more combat practice the unit has, the more efficient it will become in that teamwork in the application of fire, which is Musketry.

THE THEORY OF FIRE.

The infantry platoon is armed with several weapons, *i. e.*, rifle, automatic rifle, hand grenades, rifle grenades and bayonet. In order that these weapons be used to their full advantage, it is necessary that the leaders know their characteristics, powers and limitations. We will take up each of these weapons in turn, give a brief discussion of its characteristics, powers and limitations, concluding with the deductions we may draw from these discussions.

The Rifle.

Trajectory. The path of the bullet in its flight is called the trajectory.

When the rifle is fired at a given range, the bullet follows a path through the air which has an unvarying shape. At short range this path is nearly a straight line from the muzzle to the target. This is called a flat trajectory. As the range increases the path becomes a curve, rising from the muzzle on a nearly uniform slope above the line from the muzzle to the target. It then curves down until it meets this line again at the target. (Plate 325.)

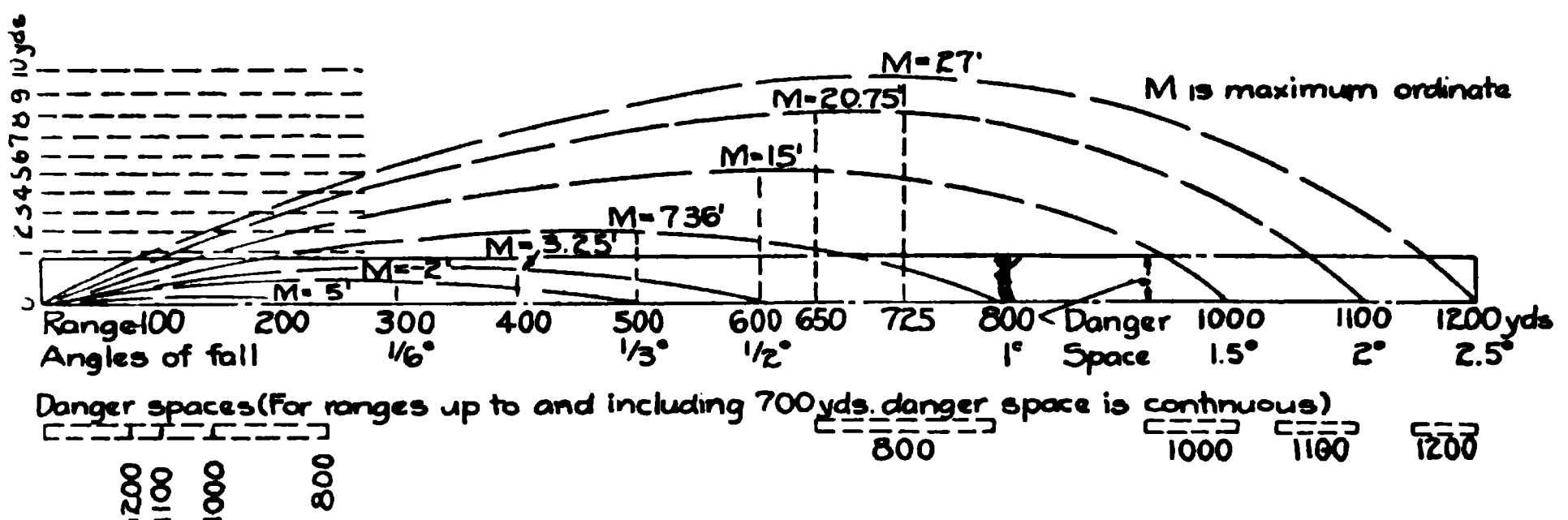


PLATE 325.—Trajectories of the U. S. Rifle, Caliber 30, Model 1903. (Springfield.)
(From actual firing.)

The angle which a line, tangent to the trajectory at the target, makes with the line from the muzzle of the rifle to the target is called the *angle of fall*. An idea of the flatness of the rifle trajectory at ordinary ranges may be obtained if it is remembered that this angle is only $1^\circ 30'$ at 1000 yards, and decreases rapidly with the range.

The sheaf. When a rifle is fired a number of times at a target, the bullet does not follow exactly the same path each time. The difference in aiming, holding and firing, variations in the ammunition, and changes in the conditions of light and weather, all cause variations in the path followed by the bullet.

These different trajectories form a cone or sheaf with the apex at the muzzle. The sheaf of course spreads out as the range increases. (Plate 326.)

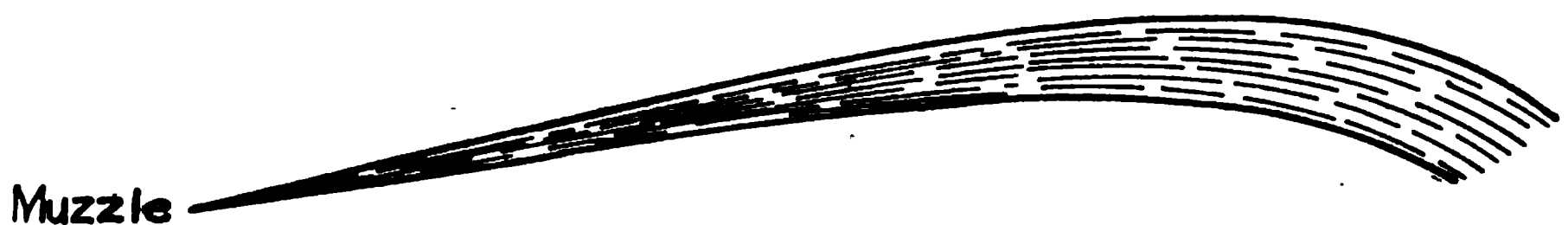


PLATE 326.—Sheaf of Rifle Fire.

RELATIVE DISPERSIONS OF RIFLE AND MACHINE GUN FIRE AT VARIOUS RANGES

FIG. 1 DISPERSION OF AVERAGE RIFLE SHOTS

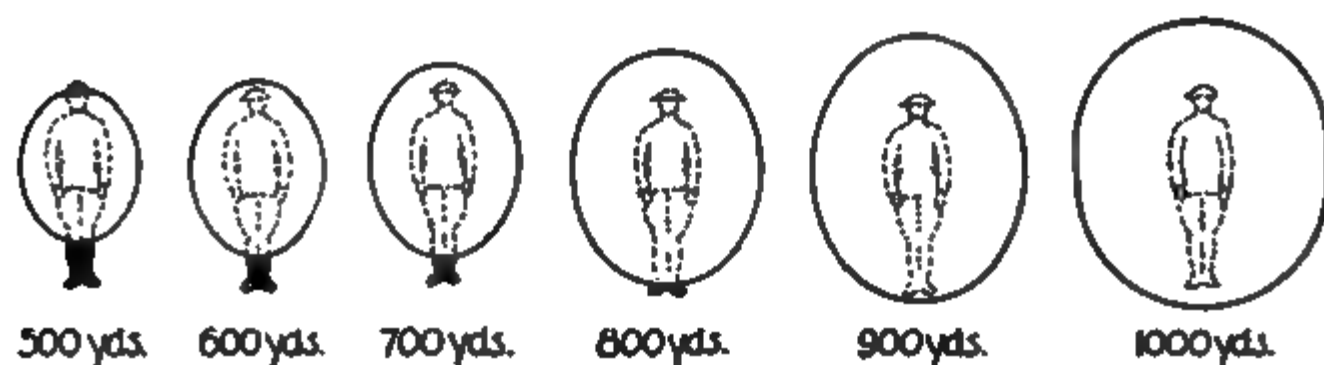


FIG. 2 DISPERSION OF 75% OF SHOTS OF A MACHINE GUN

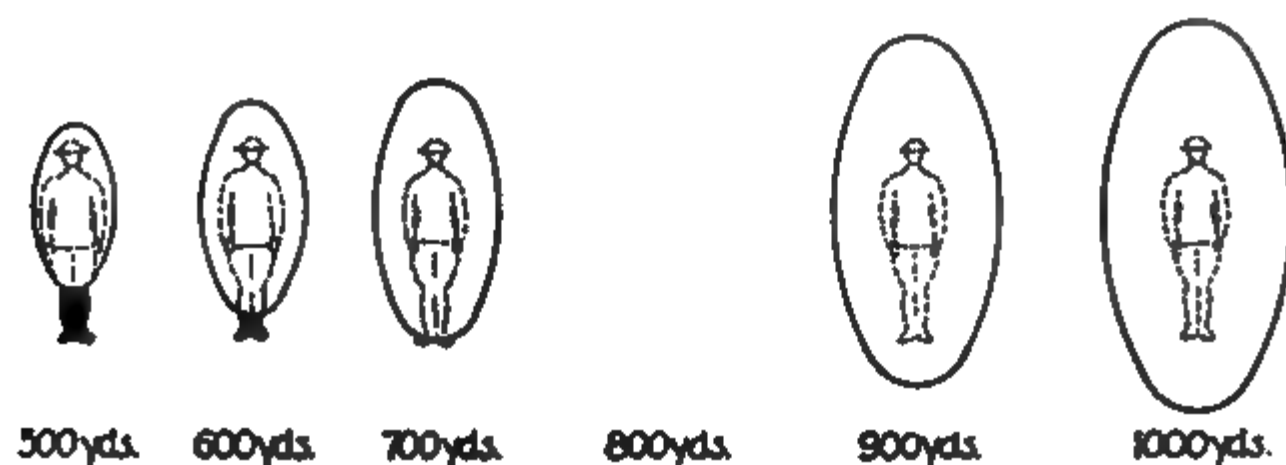
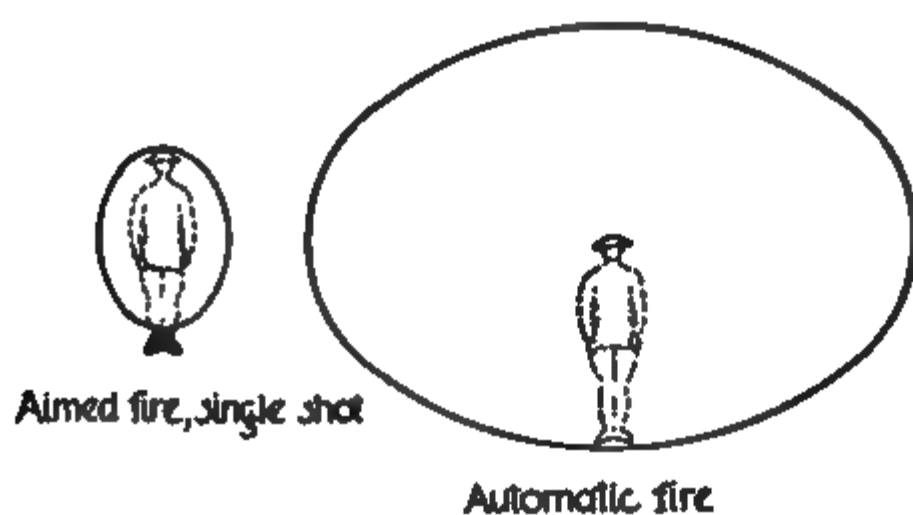


FIG. 3 COMPARATIVE SHOT GROUPS AT 600 YDS., AUTOMATIC RIFLE



The lateral dispersion or variation in the trajectory of the average rifleman (from right to left) is about .8 of a foot at 100 yards. At 1000 yards it is about 8 feet. It increases approximately .8 of a foot for each 100 yards of range. The vertical dispersion at 100 yards is about one foot (up and down). At 1000 yards it is about 10 feet. It increases one foot for each hundred yards of range.

Plate 327, shows the dispersions of average shots with the rifle at ranges of 500 to 1000 yards, compared to the size of a man.

The beaten zone. The intersection of the cone of dispersion or the sheaf with the ground surface on which the target stands is called the *beaten zone*. (Plates 328 and 331.) The width of the beaten zone on the ground is the same as the lateral dispersion, *i. e.*, .8 of a foot at 100 yards, increasing at the rate of .8 of a foot for each 100 yards increase in range.

If the lowest bullet in the sheaf, when firing at 600 yards, strikes the ground at a point 550 yards from the muzzle, the highest bullet of the sheaf would be at this time 5 feet above the point struck by the lowest bullet. This high bullet would strike the ground about 185 yards farther away, or at 735 yards from the muzzle. The distance between the two is the longitudinal dispersion. It will be seen that the beaten zone is a narrow oval, the size of which varies with the range. (Plate 328.)

At 100 yards from the muzzle the bullet has a high velocity and the trajectory is very flat. The beaten zone on level ground at this range is 300 yards long and

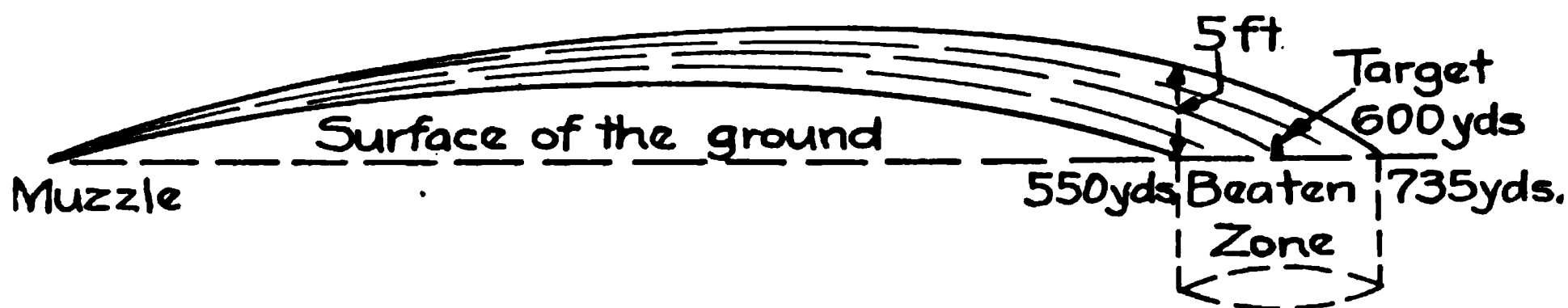


PLATE 328.—Beaten Zone.

about one foot wide. At 1000 yards the velocity is not so great, as the bullet has been slowed down by the resistance and friction of the air, and the trajectory is curving down more rapidly. The beaten zone at 1000 yards is only about 100 yards long, but 8 feet wide. At 300 yards it is 250 yards long. At intermediate ranges, the decrease in the length of the beaten zone or the longitudinal dispersion, is about 25 yards for each 100 yards increase in range. Thus at 400 yards it is about 225 yards and at 900 yards it is about 125 yards in length.

When a number of rifles are fired at the same target there is still more chance for variation. The size of the sheaf and of the beaten zone is increased, and of course the number of shots striking within this zone is increased.

We have seen from the above discussion how the width of the beaten zone increases and its length decreases as the range increases. There is still another element which enters into the length of the beaten zone. This is the slope of the ground. In Plate 329, is shown the effect that sloping ground has on the length of the beaten zone. It can be clearly seen from this diagram that rising ground *decreases* and falling ground *increases* the length of the beaten zone.

We will now see what use can be made of the information we have gained concerning the effect of ground slopes on the length of the beaten zone. When the ground slopes upward to the rear from the firing line, the second wave or supports may be placed closer to the firing line without increasing their danger from fire directed at it. When the ground slopes downward to the rear from the firing line, the supports must be placed at a greater distance than when it slopes up, unless this reverse slope is so steep as to afford complete defilade from rifle fire (dead space, or ground which the bullets cannot reach). Also we can see from Plate 330, that making the assumption that fire is equally distributed laterally along the crest, the column target behind the crest and *invisible to the enemy*, will receive unaimed hits only in proportion to its width. Accordingly under these conditions it would be

better to form the second wave in line of squad columns. If, however, the second wave is on ground rising to the rear from the firing line and *visible to the enemy*, the wave should not be in column formation, as they would thus present a vulnerable target to the enemy's *aimed fire*. A line of skirmishers would be vulnerable in such a case.

When the fire of a number of men is distributed over a target, the *depth* of the *collective* beaten zone is not changed, but the width is increased by the method of fire distribution used to cover the front of a linear target (one extending from right to left).

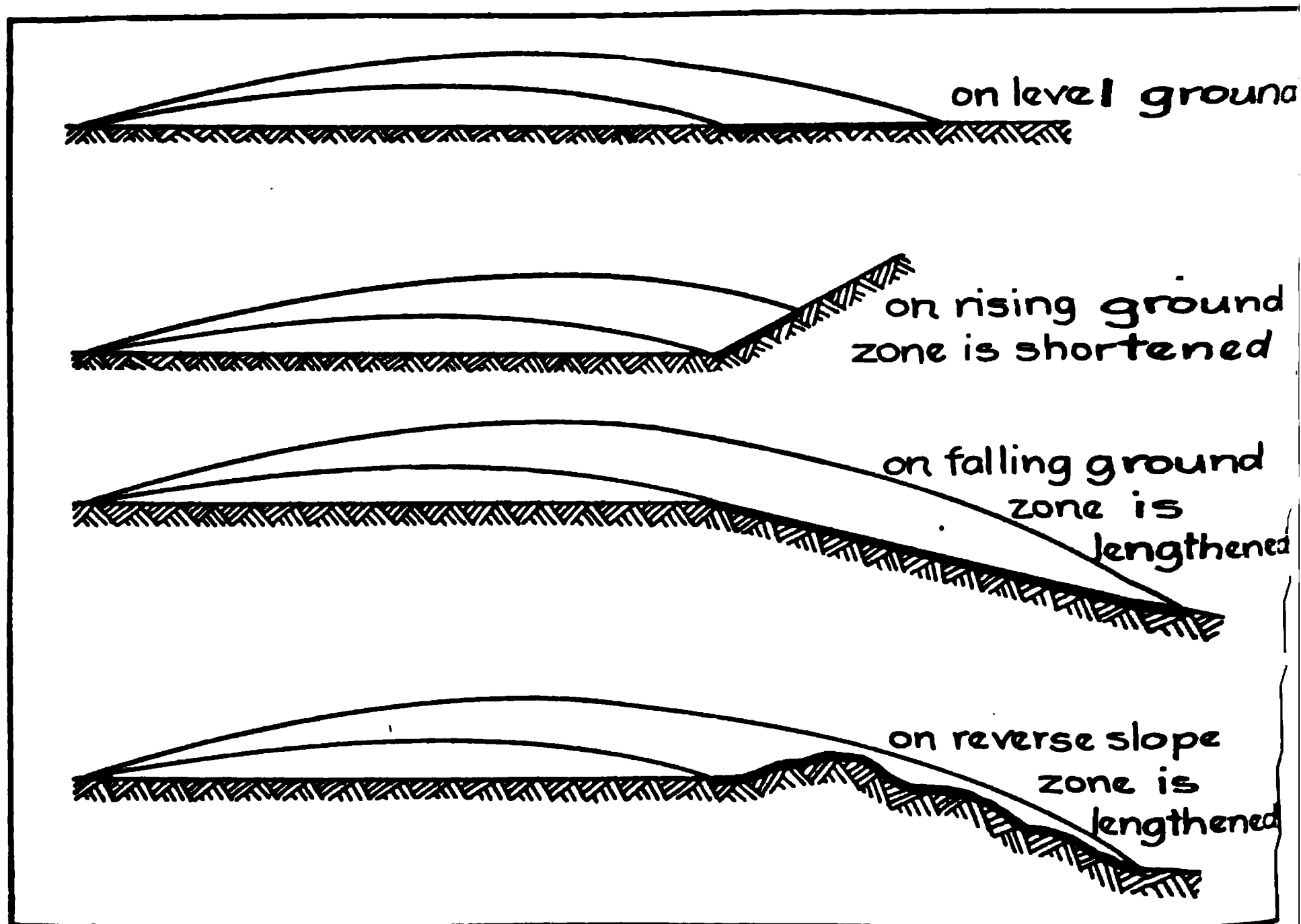


PLATE 329.—Effect of Ground Slopes on Beaten Zone.

Characteristics of the Rifle.

1. *The rifle acts by fire alone.* It has but little value as a weapon, other than for the delivery of fire.

2. *Mobility of the rifle.* The average soldier can easily carry his rifle, and sufficient ammunition for a long fire fight. Accordingly the mobility of the rifle is the same as that of the individual infantry soldier.

3. *The rifle can be used effectively only for direct fire.* While indirect fire is possible, yet practically the rifle is an individual weapon, and in actual battle satisfactory fire effect can seldom be obtained by using any aiming point other than the target itself, or a relatively small area in which the target is located.

4. *The rifle can effectively attack only targets which are above ground and in the open.* The trajectory of the rifle at ordinary ranges is very flat, and its penetrative power is not great. Accordingly it cannot be used with satisfactory effect against targets behind cover or below the surface of the ground.

5. *Rate of fire.* There is a certain rate of fire for each range at which the average marksman will obtain the best results. If this rate be not attained the full fire power

of the weapon is not being utilized. If it be exceeded the fire will be less effective even though more ammunition is expended. The proper rate of fire (shots per minute) for any range (up to 1000 yds.) is equal to 13 less the range in hundreds of yards. Thus at 800 yds. range the proper rate is $13 - 8 = 5$ shots per minute.

6. *The rifle acts by frontal fire.* To apply the fire of its rifles a unit must be deployed in line. It is not possible to utilize rifle fire to good effect in any other formation. When a unit is once deployed it can change front or direction only with the greatest difficulty, and it cannot protect its own flanks. Except by very small units fire cannot be switched to the right or left without a change of formation, involving an assembly and re-deployment in the new direction. Accordingly the rifle can be most effectively employed for frontal fire.

7. *The fire of the rifle must be laterally distributed.* When firing at a linear target, that is one extending some distance from right to left, satisfactory effect demands that fire be laterally distributed over the entire front of the target. If

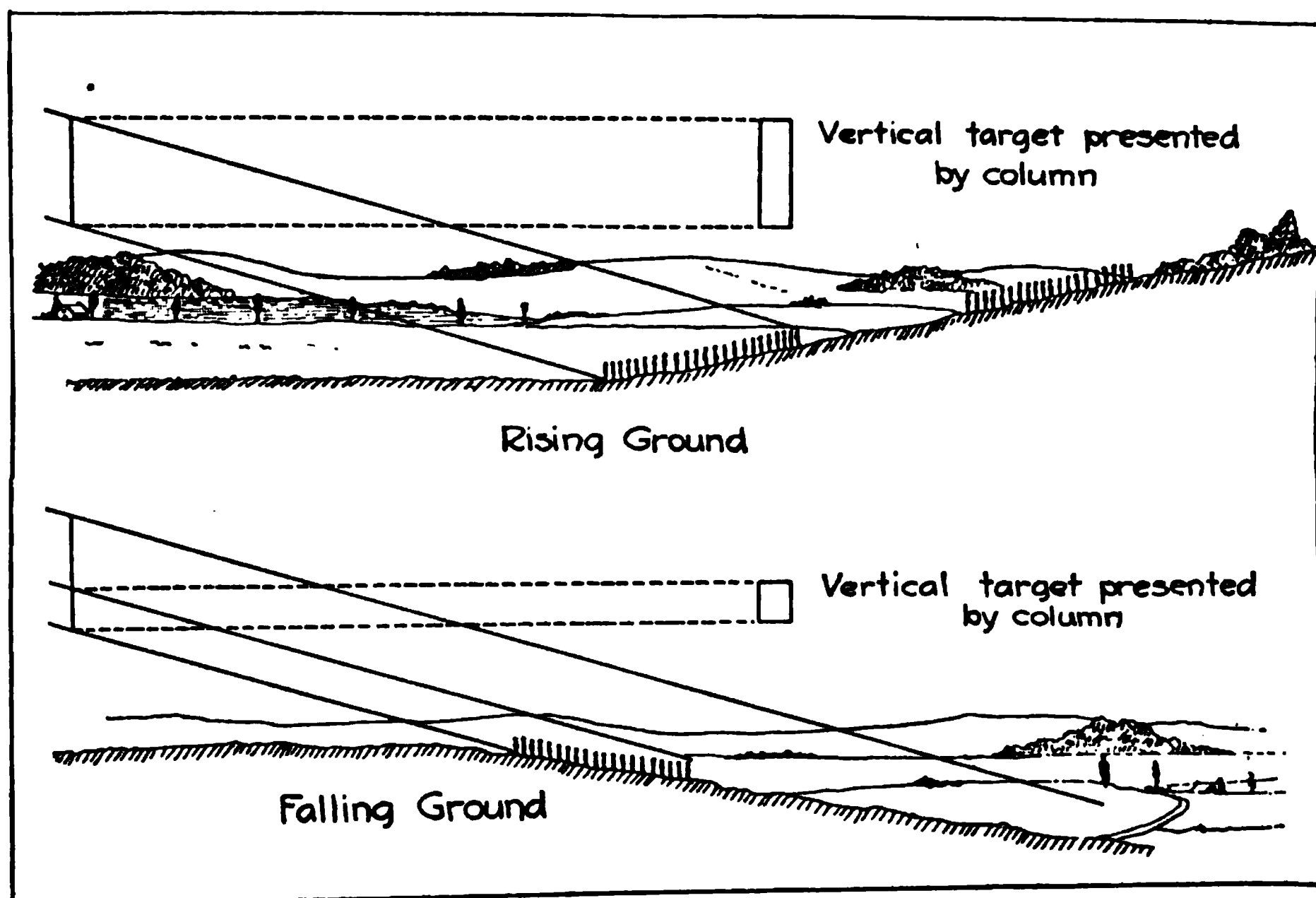


PLATE 330.—Vulnerability of Column Formations on Forward and Reverse Slope.

there be one or two prominent points and all the riflemen aim at these points they will receive most of the fire and the rest of the target will be almost free from fire. It is very easy to properly distribute the fire of a deployed line over a linear target, but it must be done by one single, definite system, so simple as to be practically second nature to the trained man when acting almost independently in the confusion of battle.

8. *Danger space.* At a range of 100 yards the bullet rises to a maximum height of only 0.7 of an inch above the line from the muzzle of the piece to the target. It rises about 5 feet above this line at a range of 700 yards and about 14 feet above it at a range of 1000 yards. This means that on *even* ground (whether or not it is perfectly level), a bullet from a rifle aimed at a point 700 yards away, will never rise more than about 5 feet 7 inches above the ground (the muzzle of the rifle will always be a few inches above the ground). That is to say the bullet will never be farther above the ground than the average height of a man. Accordingly a man standing anywhere on the line of fire, between the rifle and the point at which it is

aimed, will be hit somewhere between the top of his head and the soles of his feet. Accordingly there is a continuous *danger space* along the entire line of fire for a man of average height. If the range be more than 700 yards there will be an interval near the middle of the trajectory where the bullet will be higher than a man's head. Hence for ranges over 700 yards the danger space is not continuous. As the range increases, the length of the danger space at each end of the trajectory rapidly decreases. (Plate 331.) If the rifle be fired from a height or a depression, that is if the ground over which it is fired is not *even*, the danger space will be reduced.

Accordingly we see that, to obtain the maximum effect, the rifle should be fired over ground as nearly even as possible, and at ranges preferably not greatly exceeding 700 yards, also that the greater the height of the target the greater its vulnerability or danger space at any range. A man standing is a far more favorable target than one prone on the ground, even though the entire body be exposed in both cases.

9. *The effect of errors in range estimation increases rapidly with the range.* The beaten zone at short ranges is long. At 200 yards range it is 275 yards, at 300 yards range it is 250 yards. Hence at a range of 200 yards an error in the estimation of the range of even 60 per cent of the range will still leave the target within the beaten zone. At a range of 1000 yards an error of even 10 per cent in estimating the range will leave the target entirely outside the beaten zone.

Thus we see that correct estimation of the range is important, and that its importance increases rapidly with the range. Plate 332 shows the effects of correct and incorrect estimation of the range upon vertical and horizontal targets.

The Automatic Rifle.

Characteristics.

The automatic rifle employs the same ammunition, has the same trajectory, and when fired semi-automatically (single shot), the same dispersion or accuracy as the rifle. When fired automatically its dispersion is from 4 to 6 times that of the rifle, depending on the lengths of the bursts and the skill of the rifleman. Plate 327 shows the relative dispersions of the automatic rifle at 600 yards range, using automatic and semi-automatic fire.

Practically the only difference between the rifle and the automatic rifle is in the rate and volume of their fire, and the amounts of ammunition they expend. Accordingly the characteristics of the rifle noted as Nos. 1-3-4-7-8-9 in the preceding discussion are virtually the same for the automatic rifle. By reason of its automatic action, however, this weapon has the following additional characteristics:

1. *The automatic rifle can produce a large volume of concentrated fire.* The best results can therefore be obtained on targets having considerable depth even though their fronts be narrow. Hence the automatic rifle should seek opportunities for enfilade or flanking fire, for which it is especially suited.

2. *Rates of fire.* At ranges up to 600 yards the automatic rifle can deliver effective fire at a rate of from 10 to 50 shots per minute. At longer ranges this rate must be materially decreased. Automatic fire should be used only against massed targets, especially of a transitory or fleeting nature, at relatively short ranges.

3. *Small area occupied in proportion to fire power.* The automatic rifle occupies the same frontage and depth as one ordinary rifle, as it is operated by one man. It is thus capable of producing a large volume of fire from a small area. This characteristic enables it to meet an attack from a flank with but little if any movement. It is therefore a most useful weapon for defense against attack from the flank.

4. *Mobility and vulnerability.* The automatic rifle, like the rifle, is carried and operated by one man, but it consumes about 4 times as much ammunition as a rifle. The individual soldier can carry the weapon and a limited amount of ammunition. The remainder of the squad all carry extra ammunition for the weapon, sufficient for a protracted engagement. Accordingly the mobility of the automatic rifle is practically that of the infantry squad, or somewhat less than that of the individual.

FIG.1 CONTINUOUS DANGER SPACE

At short range the height of the trajectory never exceeds that of a man.

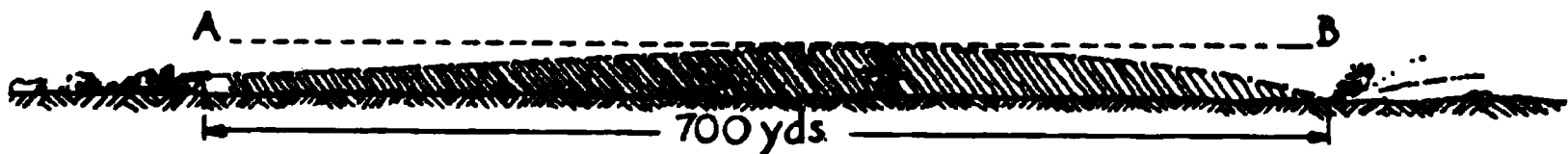


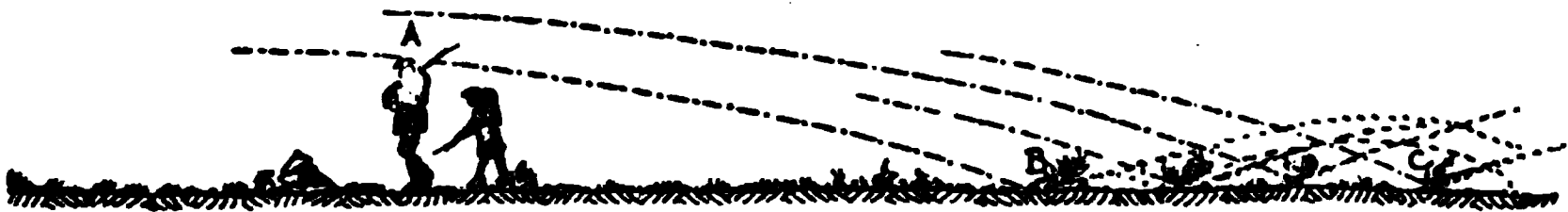
FIG.2 SHORT DANGER SPACE AND LONG SAFETY SPACE IN LONG RANGE FIRE

Between A and B the bullet is always higher than a man's head.



FIG.3 DANGER SPACES OF TRAJECTORY AND RICOCHET

At A occurs the "first catch" by lowest part of cone of fire . At B occurs the "first graze". At short and medium ranges , where trajectory is flat , there is an indefinite danger space beyond C, due to ricochet, depending on the direction and remaining velocity of the ricochet bullets.



SHEAFs OF FIRE, BEATEN ZONES AND DANGER SPACES AT SHORT AND AT LONG RANGES

FIG.4 SHORT RANGE

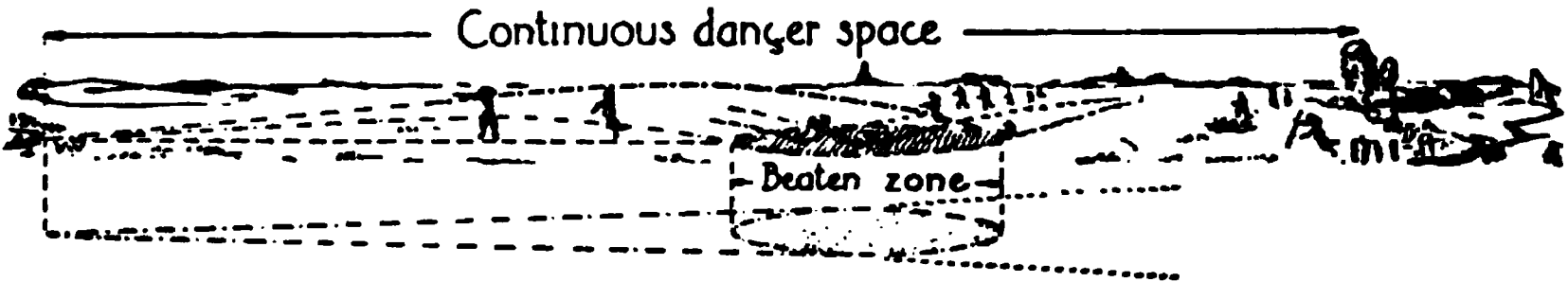


FIG.5 LONG RANGE

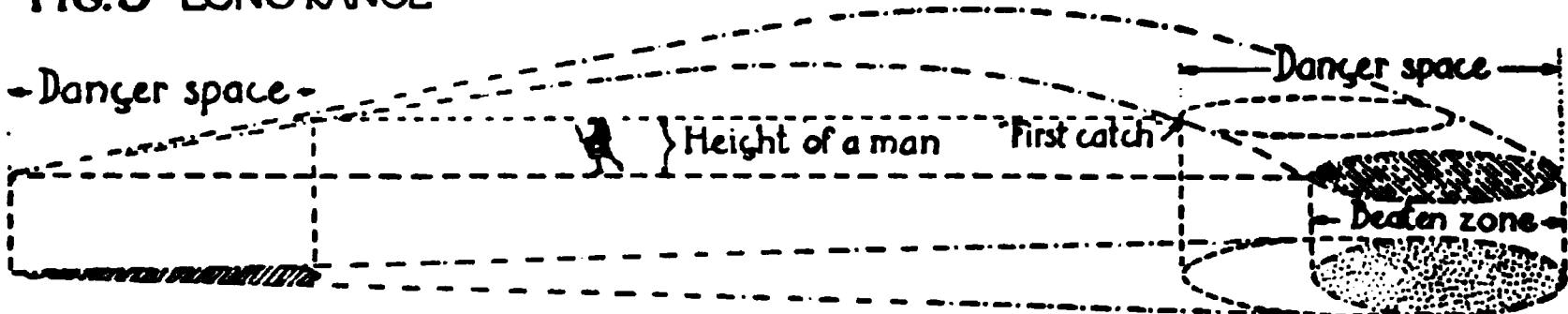


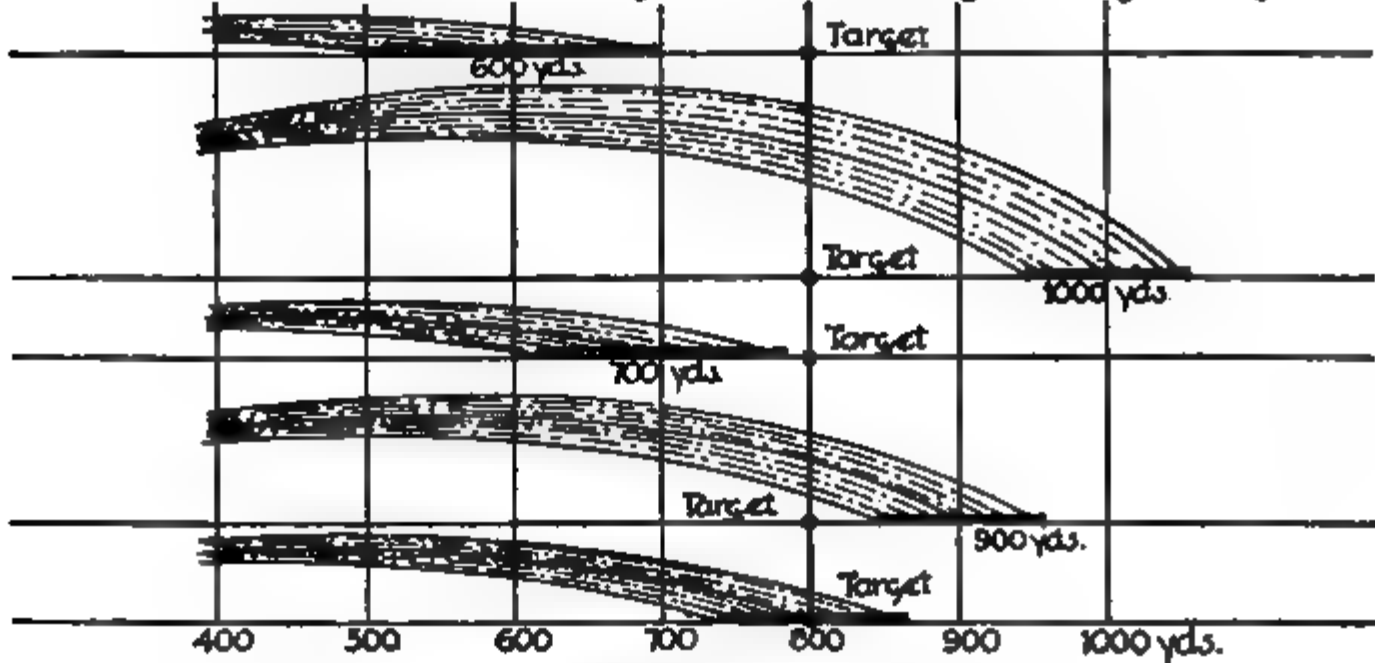
PLATE 331.—Danger Space and Beaten Zone of Rifle Fire.

EFFECTS OF ERRORS IN ESTIMATING RANGE
ON ACCURACY OF RIFLE FIRE

FIG.1 VERTICAL TARGET. Hostile machine gun in window of steeple.
Range. 800 yds.

SHOT PATTERNS RESULTING FROM VARIOUS SIGHT SETTINGS

FIG.2 HORIZONTAL TARGET. Hostile machine gun at 800yds on the same level. Beaten zones resulting from various sight settings, average shots



As it is carried by one man and is no larger than a rifle, the automatic rifle has the same vulnerability as the rifle, except that when fired automatically it is more apt to draw hostile fire upon itself.

5. *The automatic rifle is a squad weapon.* The automatic rifle is a squad weapon, and should function as a part of the infantry squad, both in offense and defense.

Hand Grenades.

The hand grenade is chiefly a weapon for the defense, for small attacks and for raids in trenches. It is used principally against personnel below ground or behind cover. It will destroy such personnel or may force them into the open where they become targets for the rifle and automatic rifle.

Characteristics.

1. *Curved trajectory.* This characteristic indicates that the weapon is especially valuable against targets behind cover or below ground level.

2. *Rate of fire.* An effective rate, under favorable conditions, of 10 grenades per minute can be attained. This enables a few men to put down an almost impassable barrage on ground defiladed from rifle fire. This feature makes it especially valuable in the defense.

3. *Radius of action.* The hand grenade has an effective radius of action of from 20 to 100 yards depending upon the type used. The short distance the grenade can be thrown prevents the use in the open of grenades having a large radius of action. Such grenades must be thrown from behind cover.

4. *Weight.* The relatively great weight of the hand grenade (about 1½ pounds), limits the number of grenades which can be carried. This characteristic reduces its value as an offensive weapon, except for operations involving only a slight advance.

5. *Short range.* The hand grenade can be thrown from 30 to 40 yards by an average man. It is therefore of little value in attacks against machine guns and similar objectives, especially in open warfare.

6. *The hand grenade can be thrown from below the ground surface, or from behind cover.* This characteristic makes the hand grenade essentially a weapon of "trench warfare," for harassing, and cleaning up captured trenches, shelters, etc.

7. *Types of hand grenade.* The hand grenade may be produced in various types for different purposes. It can be used for lachrymatory or irritating gases. Because of its very short range and relatively great radius of action, it is not very suitable for lethal (poisonous) gas, except for attack against deep shelters. Gas grenades are valuable against an enemy hidden in such shelters. The grenade is also constructed in certain types for incendiary effects, setting fire to all combustible objects within its radius of action. Other types produce a large volume of smoke, useful for the creation of local smoke screens to conceal the movement or location of troops, or to blind the enemy.

The Rifle Grenade.

The rifle grenade has a longer range than the hand grenade. This makes possible its use in open warfare, especially against machine guns or infantry behind cover.

Characteristics.

1. *Curved trajectory.* The rifle grenade has a curved trajectory, and can therefore reach a target below the surface of the ground, or behind cover, which would be safe from rifle fire from the same locality. It cannot, of course, penetrate even a light shelter.

2. *Limited use.* The rifle grenade should never be used against targets which can be effectively attacked by the rifle or automatic rifle, as it is far less effective and economical.

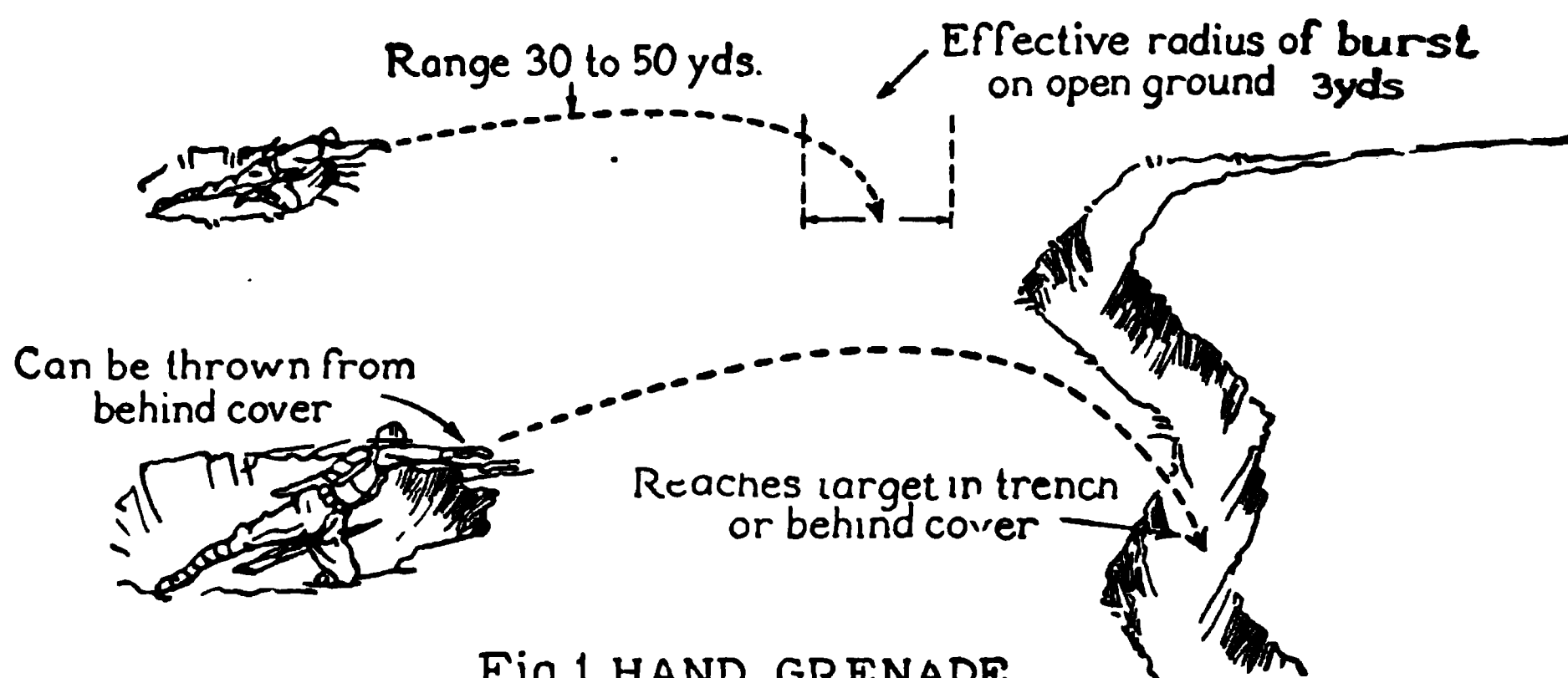


Fig.1 HAND GRENADE

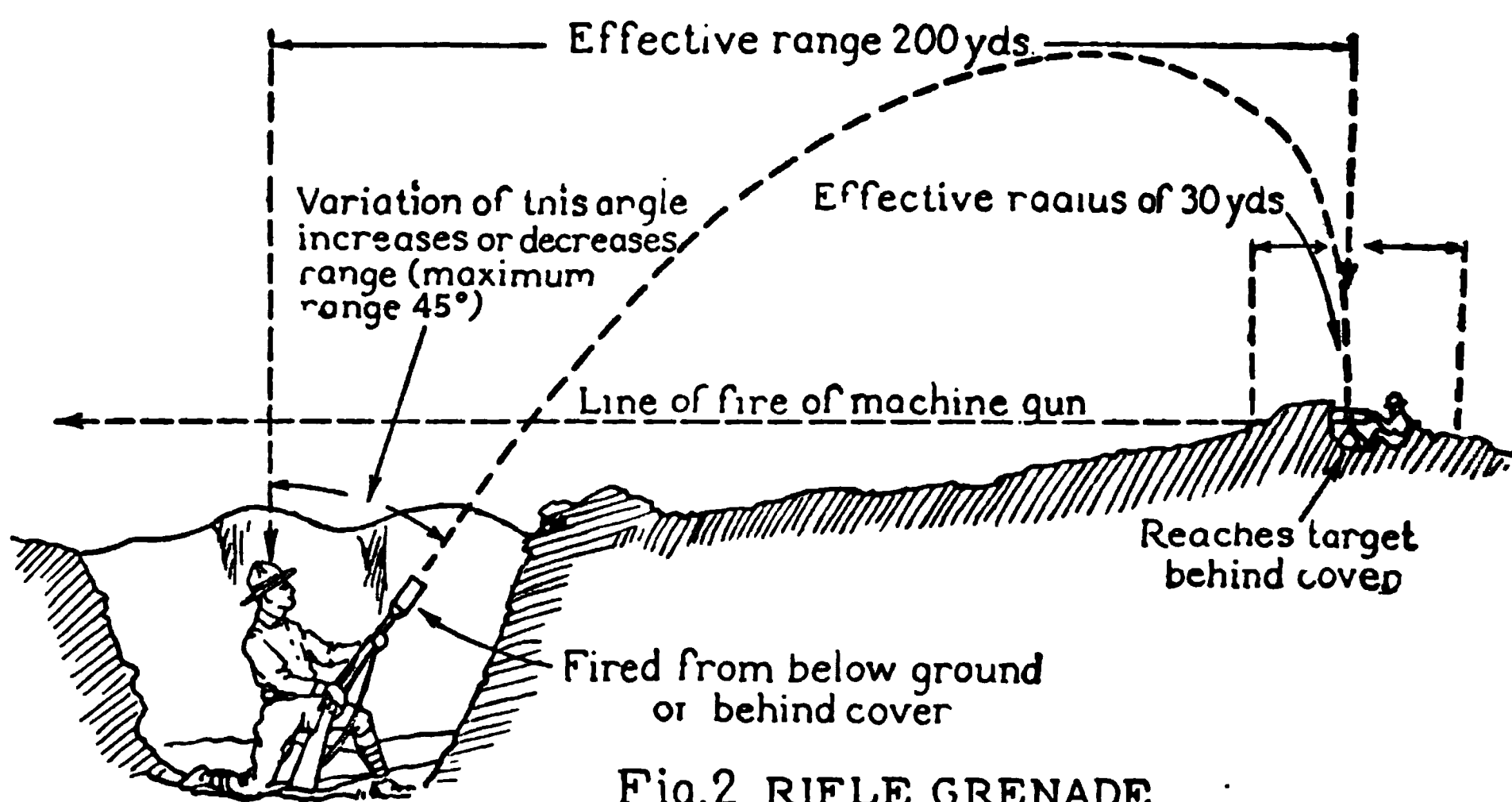


Fig.2 RIFLE GRENADE

PLATE 333.—Characteristics of Grenades.

3. *Weight.* It weighs about $1\frac{1}{4}$ pounds. It is difficult to transport and must be used with care—generally to drive personnel into the open where they may be reached by the rifle and automatic rifle. The weight of the ammunition limits the volume of fire which can be relied upon.

4. *Radius of action.* It has an effective radius of action of from 20 to 30 yards from the point of impact.

5. *Degree of accuracy.* With proper training a rifle grenade may be fired with a fair degree of accuracy. The best result, however, is obtained when the rifle is held in a fixed support. Its fire is then very accurate.

6. *Long range.* The rifle grenade has an effective range of from 30 to 200 yards, much greater than that of the hand grenade.

7. *Rate of fire.* Rifle grenades may be discharged at the rate of ten grenades per minute. However the most effective rate is from 5 to 8 per minute.

8. *Can be thrown from below ground surface or behind cover.*

9. *A squad weapon.* The rifle grenade is a squad weapon and should function as an element of the infantry squad.

TECHNIQUE OF FIRE.

In order to apply the fire of any weapon in the most effective manner three things are essential.

1. The range must be known.

2. The target must be recognized.

3. The fire must be properly distributed over the target.

In applying the collective fire of the rifles and automatic rifles of the infantry units these three elements are of fundamental importance. They constitute the technique of infantry fire.

RANGE ESTIMATION

Accurate estimation of the range is necessary. No matter how well the rifle is aimed, there can be no effective fire without correct sight setting. In fact the better the individual men are able to hold and aim their rifles, the less will be the effects of their fire if the range has not been correctly determined. The fire of good shots is concentrated at the range given, and does not cover the entire landscape as does that of untrained shots. Consequently they may not hit the target at all if they are given the wrong sight setting. The teaching of correct range estimation is not difficult and does not consume a great deal of time. It does, however, require practice, and a lot of it.

The only practical way for an infantry platoon in battle to determine the range is by estimation by eye.

The proper selection of fire positions, the decision as to formations, the selection of cover for supports, and many other questions of fire tactics, call for the determination of the range before the proper results can be obtained.

Unless the range is accurately determined rifle and automatic rifle fire, and in fact even that of the rifle grenade, will be unsatisfactory. The effect of errors in range determination on rifle fire is shown by the table on p. 438.

Every effort must be made to make every man in the platoon a trained range estimator. *Estimating* ranges is not *guessing* ranges. There is a way to estimate a range—a definite system—and it must be thoroughly mastered and applied.

Method of Range Estimation.

The estimator must be thoroughly familiar with the appearance of a unit of 100 yards on the ground. For distances up to 500 yards apply this unit and determine the number of times it is contained in the distance to be estimated.

If the distance is short and the observation good the estimator may be able to say that the unit is contained two and one-half times, or four times, etc. But it is well to apply this method several times and frequently different results will be obtained.

TABLE
Relative number of hits at various ranges when incorrectly estimated.

Range used, yds.	Error in Estimate, yds.								
	0	50	100	150	200	250	300	350	400
	Relative number of hits.								
400	100	96	83	67	49	32	21	12	8
450	100	96	81	62	43	27	16	9	6
500	100	93	78	57	36	21	10	6	3
550	100	92	74	50	30	15	7	4	1
600	100	91	69	43	23	9	4	2	0
650	100	90	64	38	18	7	3	0	
700	100	88	59	32	13	5	1	0	
750	100	86	55	27	10	3	0		
800	100	84	50	22	6	1	0		
850	100	82	46	18	5	1	0		
900	100	80	41	13	3	0			
950	100	78	37	11	2	0			
1000	100	75	32	8	1	0			
1050	100	73	30	7	1	0			
1100	100	70	27	5	0				
1150	100	69	24	5	0				
1200	100	67	20	4	0				
1250	100	65	18	3	0				
1300	100	63	15	2	0				
1350	100	59	13	1	0				
1400	100	55	10	1	0				
1450	100	54	9	1	0				

NOTE.—The above table is based on the results of experimental firing by a class of riflemen who were regarded as slightly above the average company in individual proficiency, all of the men being expert riflemen or sharpshooters.

If “good marksmen” shooting at — yards with sights set correctly make 100 hits by firing a certain number of rounds, then the same men firing at the same target and range the same number of rounds, but with a sight setting — yards in error will make — hits. To illustrate: “Good marksmen” at 800 yards with correct sight setting will make 100 hits (the number of rounds necessary to make the 100 hits is immaterial), but if the sights are set at 900 yards or 100 yards in error, they will make but 41 hits, as will be seen from the table by looking along the 900-yard line until the 100-yard error column is reached, where the figure 41 will be found. By a study of this table it will be evident that where an error is made in determining the range, the number of hits made on the target will drop off very rapidly as the error in range determination increases.

The average of these estimates will give the most probable range.

Example. By the first estimate the unit is contained 3 times, or the range to a house is 300 yards. The second estimate is 400 yards. The mean is 350 yards, the most probable range to the house.

If the range is more than 500 yards or is over difficult ground, then determine the middle point, estimate the range to this point by applying the unit, and double this estimate. Estimates should be to the nearest 50 yards.

The effect of perspective will be to make the farther half seem shorter than the nearer one. The target will appear to be nearer than it really is:

1. When the target is plain and distinct.
2. When the atmosphere is clear.
3. When the light is good.
4. When the color of the target is such as to contrast with the background.
5. When the ground between the observer and the target is level and uniform.
6. When looking downhill.

Therefore the estimated range is probably less than the true range. For example: If the estimation is 520 it is probable that if all or some of the above conditions exist 550 is closer to the true range than 500.

The target will appear more distant than it really is:

1. When looking over a depression in the ground.

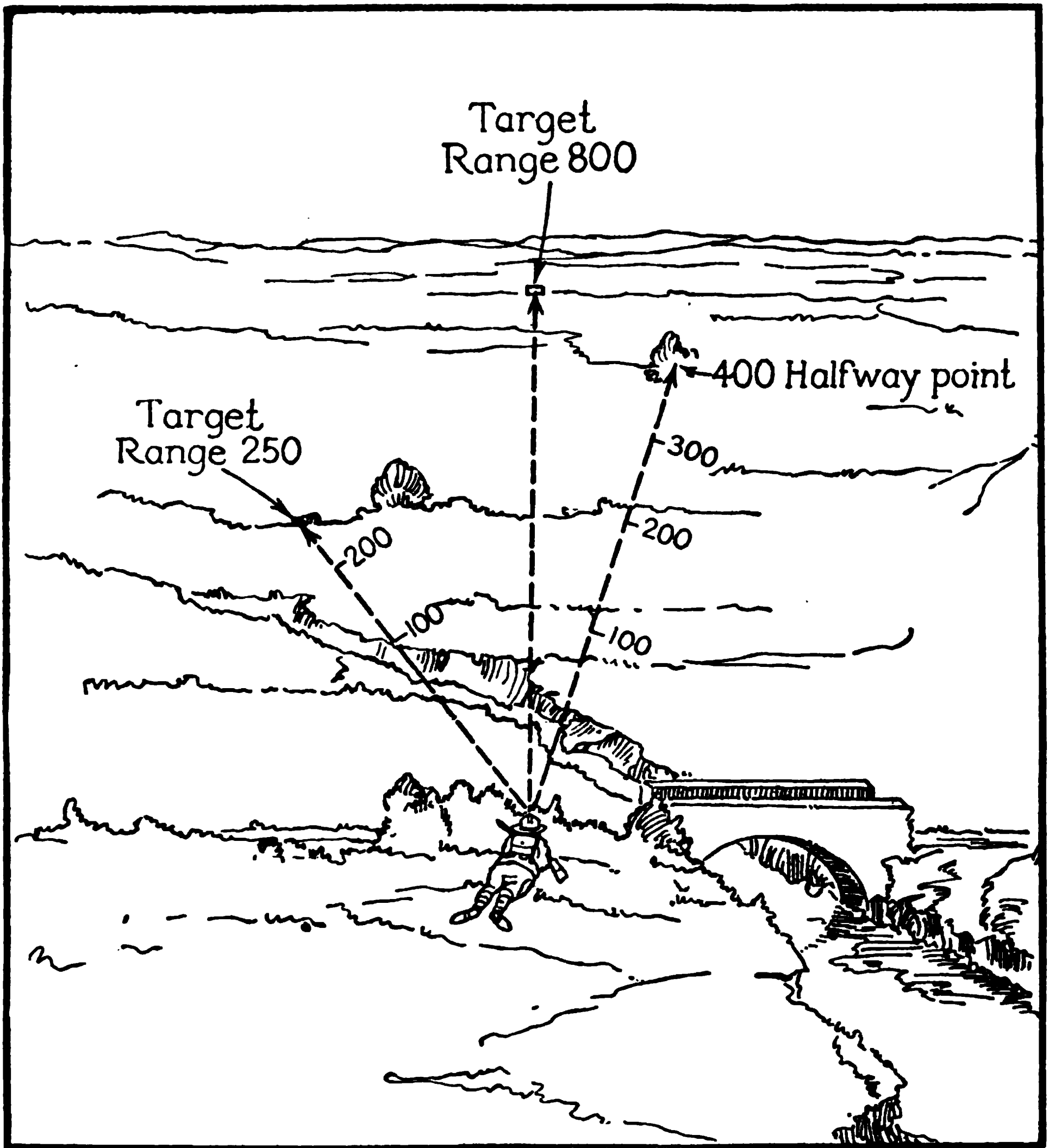


PLATE 334.—Range Estimation.

2. When in a poor light or fog.
3. When looking uphill.
4. When the target is nearly hidden.

It is probable that the range will be over-estimated. In the above example, it would be more likely, if these conditions existed, that 500 is the true range.

Summary. a. Have the appearance of a unit length of 100 yards on the ground firmly fixed in the mind.

b. Apply this unit to the range as a unit of measure.

c. If unable to determine exactly the number and fraction of times it is contained in the distance, add several estimates, and determine the average.

d. If the range is over 500 yards or the country is difficult so that the unit cannot be applied with accuracy, select the middle point, carefully estimate the range to this point and double the estimate.

e. After determining the range as above, observe the conditions. If the estimate appears to be too high due to poor light, indistinct target, etc., decrease; if too low due to very distinct target, good light, etc., increase.

TARGET DESIGNATION.

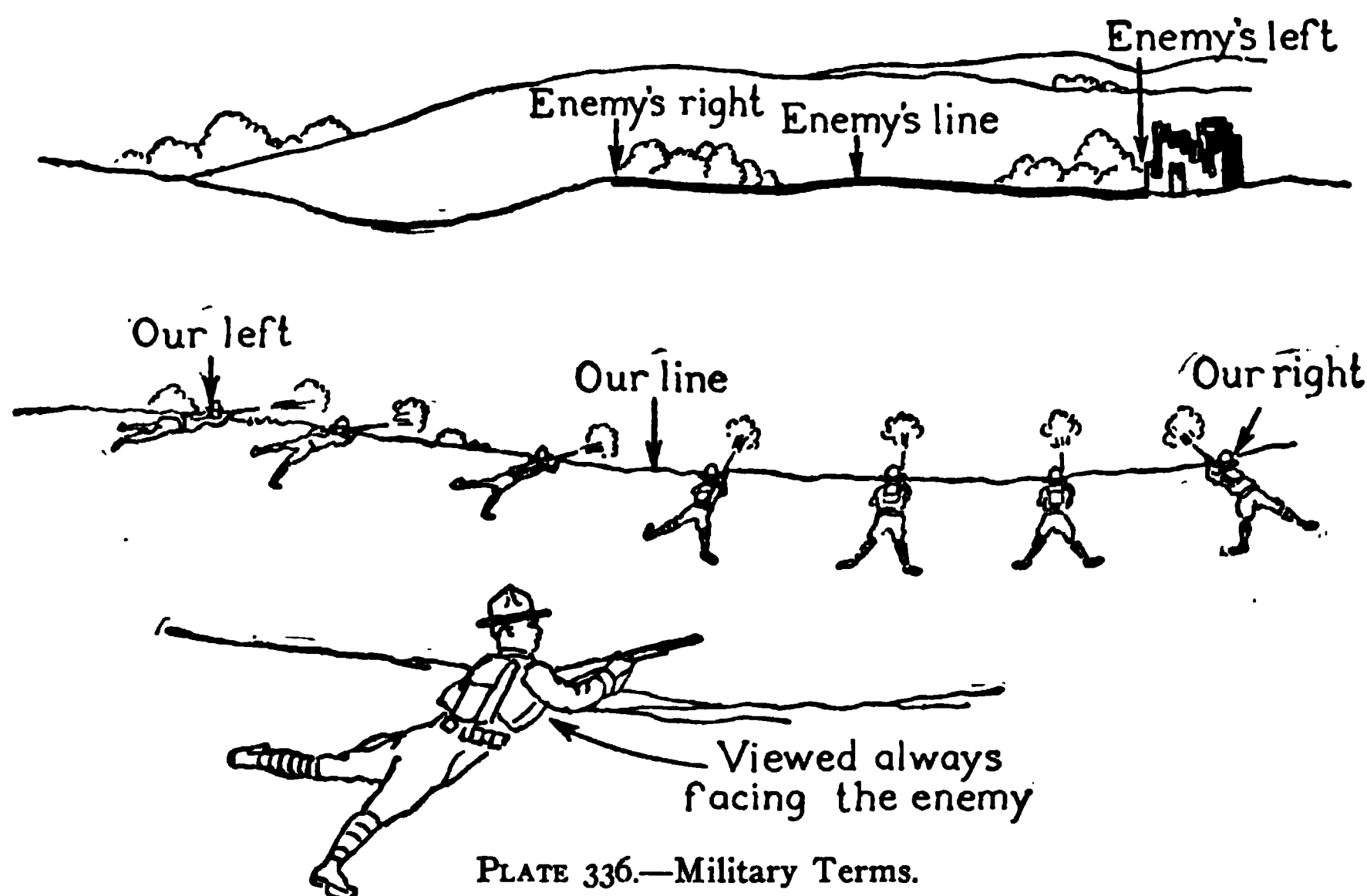
Importance of proper designation. Smokeless powder, neutral-tinted uniforms, camouflage in the concealment of works, use of cover, and suitable backgrounds.

all tend to diminish the visibility of the enemy and thus increase the necessity for thorough training in the designation and recognition of targets. Poor description of targets or delay in opening fire results in a loss of fire effect that may prove disastrous.

A faulty description is confusing, all of the men will not recognize the target, and there is consequently a delay in opening fire. This is especially true with fleeting or transitory targets. Bad description may result in a part or the whole of the unit mistaking the target, the outcome being a total loss of fire effect on account of firing at the wrong target. Part of the line may become confused and not fire at all.

Essentials of proper training. An analysis of the elements of target designation indicates the necessity for the following training:

- a. Familiarity with terrain.
- b. Familiarity with military and topographical terms.
- c. Visual training; ability to observe and study terrain.
- d. Methods of target designation.



For officers and non-commissioned officers to become familiar with terrain, it must be made the subject of study, the important features picked out, and the whole visualized in such a manner that one is able to describe these important features in a few words, which will call the attention of the men of the unit to the points described. Landscape sketching is one of the best ways of teaching this. In drawing a landscape sketch, hundreds of features of the terrain which at first sight are not noticed, will appear. A man trained to familiarity with terrain will take in these features at a glance, and a great deal of time will be saved in locating and designating targets.

It frequently happens that men fail to understand terms such as skyline, horizon, crest, military crest, ridge, peak, gentle slope, steep slope, hollow, valley, spur, saddle, clearing, fold in the ground, cover, culvert, cut, embankment, parapet, sunken road, road junction, right or left bank of a stream, etc. These terms are frequently used in target designation and should be instantly recognized. (See Plate 335.)

Military terms such as "right of enemy's line" or "enemy's right" mean *his own right*, or as we face him *to our left*. Our "right" means *our own right* when facing the enemy. (See Plate 336.)

One of the essentials in teaching target designation and the recognition of service targets is the cultivation of the soldier's vision. He must be taught what to look for, how to look for it and how to retain visual impressions. (See Scouting and

Patrolling.) Exercises will be given throughout the course during the practical work, to stimulate the power of vision that the student may appreciate the necessity for cultivating a faculty of such importance in modern warfare.

Good target designation means that one man is able to point out so plainly to another man or group of men, the location of a target which he has recognized, that all will be able to locate the target in the minimum of time. *Any way of designating which will work under varying conditions and accomplish the above results is permissible and is a good system.* However, if one remembers the extended formations of the infantry platoon either in attack or defense, it is very evident that the methods of designating targets which will work, are very few.

Elements of information in target designation. Good target designation must give three elements of information about a target:

a. The *Distance* (range) to the target. This is given first because it is important that the unit which is to apply fire, know the range in order to set their sights.

b. The *Direction* of the target. Knowing how far to look, as soon as the direction in which to look is known, the eye will be directed to a particular *point* or *small area* in the landscape.

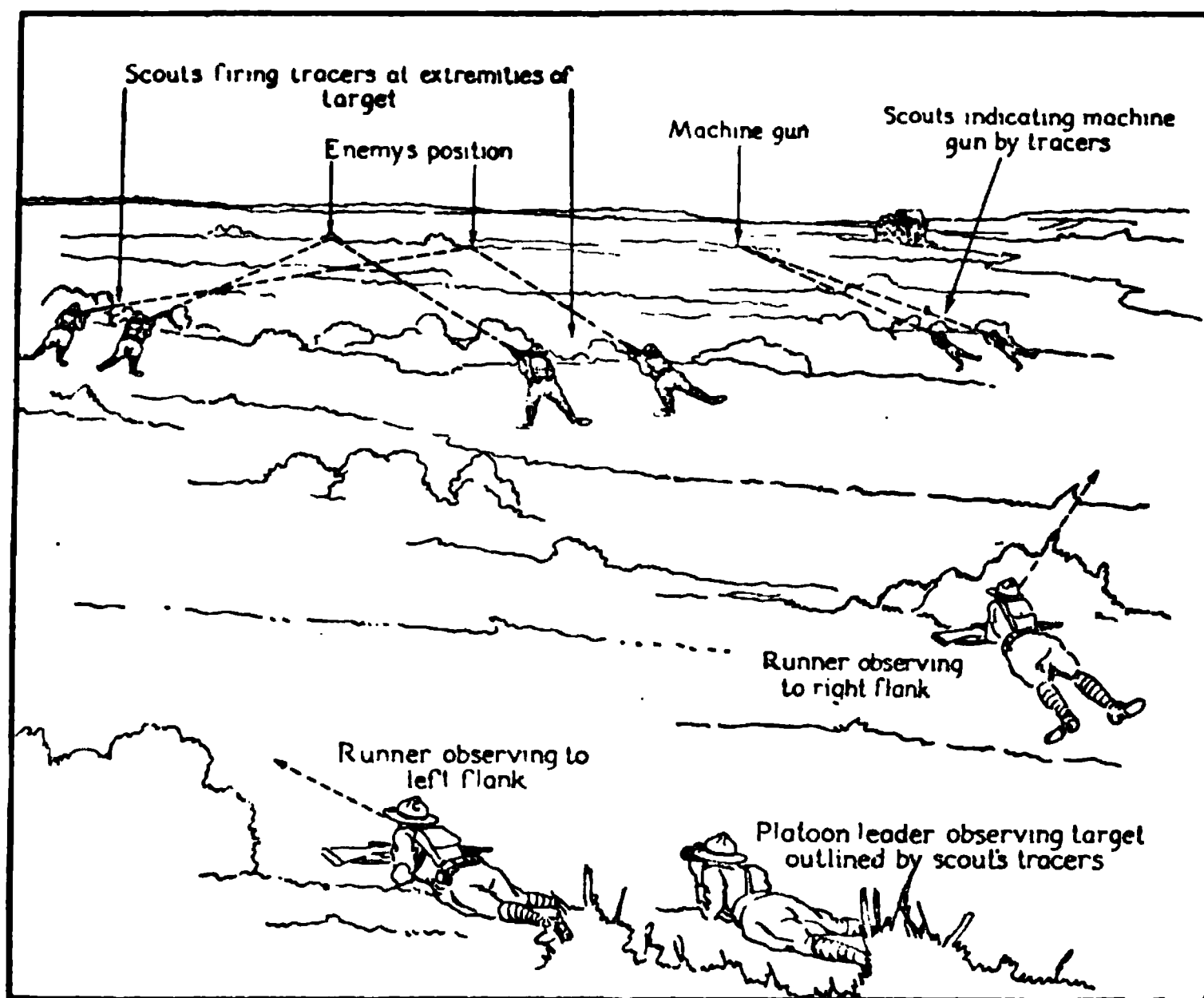


PLATE 337.—Target Designation with Tracer Bullets.

c. The *Description* of the target. The eye having been directed to a certain small area of the landscape, it must be told what to look for in that area.

Whenever a target is designated the designation should follow this order. It is needless to say that one element or two elements of this essential information *may* be sufficient target designation. In designating targets, the distance or range should never be omitted. However, if the target stands out alone in front of us, the direction and even the description may be unnecessary. It is merely a question of which of two targets to attack, the range and direction alone would be necessary. We shall see in the course of this lesson that a description of a linear target is absolutely necessary for the purpose of controlling *distribution of fire*.

General Methods of Target Designation.

There are three methods of target designation. The time and means of communication and the tactical situation will determine which method or combination

of methods to use. Considering those methods as principles—they are correct principles of target designation—the measure of successful leadership will be a man's ability to apply these principles to concrete cases on the battlefield. Practice and *common sense* are the essentials of the training which will fit him to do this.

The three methods of target designation are:

a. Mechanical means. The tracer bullet is the best means of target designation under ordinary conditions.

1. It not only gives to a trained man, a good idea of the range, but checks the range for the man firing. His eye can, with practice, follow his own tracer bullet. If the section leader fires at a target estimated as 700 yards away and the bullet falls 100 yards short, he can immediately signal to his squads "Range, 800." The section leader must know the effect of ground slopes and be thoroughly familiar with the trajectory and sight scale. For example, if the ground in rear of the target rises on a 15 degree slope, a bullet fired at the target with a range of 900 yards might strike only 25 to 50 yards beyond the target, yet the range would have to be reduced between 200 and 300 yards to give the correct sight setting for that target.

2. All the unit, even though scattered over 200 yards of front, and in most cases with the supports 100 to 200 yards in rear, can follow the trajectory of the tracer bullet through the air, and get the direction to the target.

3. If the target is a *point*, such as one machine gun, the tracer will indicate its exact location better than the best description. It will locate a *small area*, which contains the target. Fire *must* be applied to this small area of terrain, if the enemy is skilled in the use of cover, because the target may not be seen.

4. If the target is a *line*, tracer bullets must be fired at each end of the target. This locates the line of terrain or frontage between the two points, to be covered by the fire of the unit. The movement and action of the enemy will further show the target to the men. (See Plate 337.)

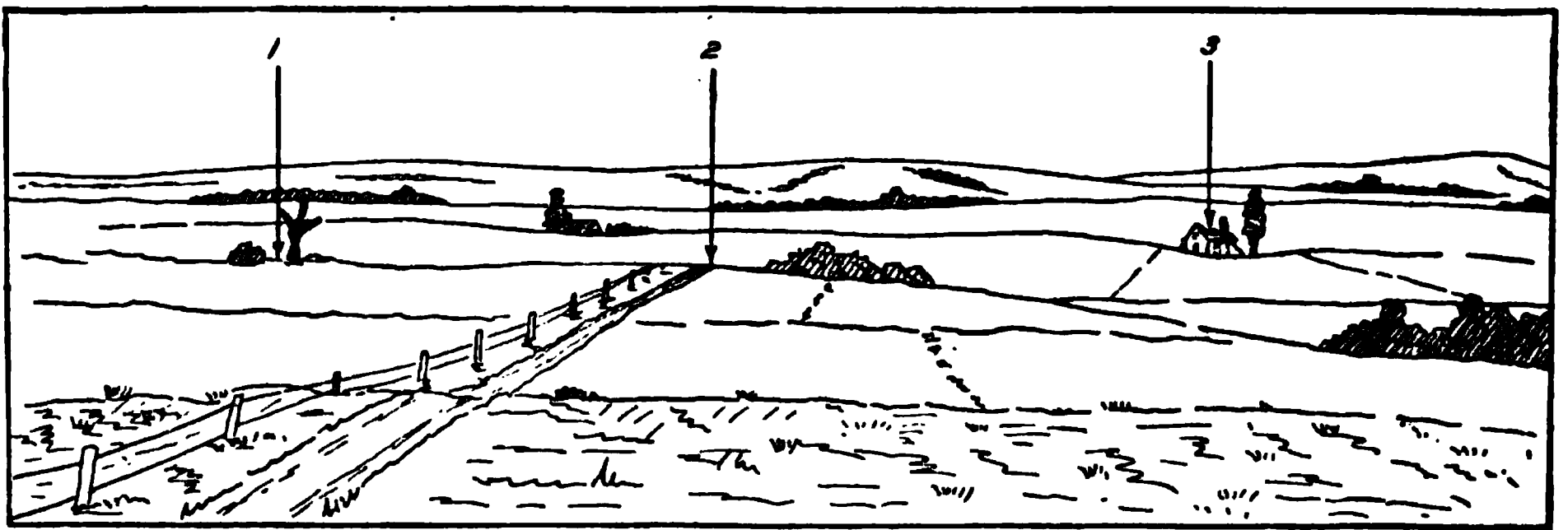


PLATE 338.—Target Designation.

1. Range, 400. Dead tree to left front. Machine gun in bush.
2. Range, 500. Where road disappears over crest. Lone scout.
3. Range, 800. Right doorway of ruined house. Automatic rifle.

5. The men using tracer bullets to designate targets must be expert riflemen, skilled in range estimation. They must be able to adjust their fire accurately, by estimation. The range used or the corrected range, should always be announced or signaled to the unit by the men using the tracer bullets. The scouts 250 yards in front, the platoon leader 50 yards in rear, or a flank patrol 200 yards to the flank, can all use this means of target designation equally well. Target designation with tracer bullets is a special function of the platoon scouts.

b. By voice. The use of this method of target designation is limited by the difficulty of verbal communication in battle. It will often be used with small units where designation is given to assembled leaders, or in rendering verbal reports or giving of verbal orders by one man to another.

The following simple examples will indicate the method of target designation by voice. (See Plate 338.)

The *distance* or *range* must be given first, thus:

1. Range, 400. 2. Range, 500. 3. Range, 800.

This tells the soldier how far to look for the target. It fixes a **zone** of the terrain within which the target will be found.

The *direction* is given next. To do this pick out a single prominent **object** in or very near the target, which can be quickly identified from a simple description. This is called the *reference point*. There should be no similar object in the vicinity which might be mistaken for it. The reference point is described thus:

1. Dead tree to left front.
2. Where road disappears over crest.
3. Right doorway of ruined house.

The *description* of the target is given last, thus:

1. Machine gun in bush.
2. Lone scout.
3. Automatic rifle.

The *complete target designation* includes thees three items, thus:

1. Range, 400. Dead tree to left front. Machine gun in bush.
2. Range, 500. Where road disappears over crest. Lone scout.
3. Range, 800. Right door-way of ruined house. Automatic rifle.

In the foregoing examples the target consists of a single point, so close to the prominent object given as a reference point that no measurements of distance are needed. Thus in the first example, there is but one bush near the dead tree, the

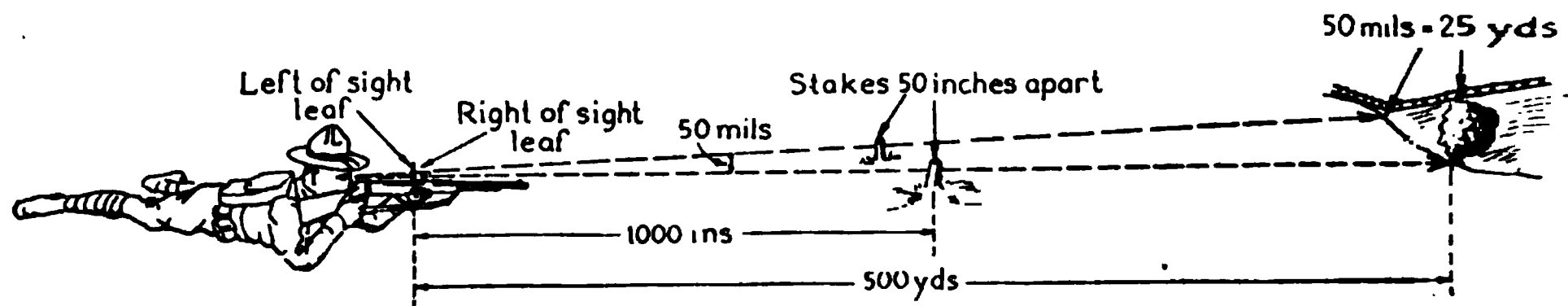


PLATE 339.—Measuring Frontage by Sight Leaf Intercept.
50 mils = 1 sight = 1 finger.

machine gun is in this bush, and the designation given at once directs the attention of the men to the bush in question. Had there been a bush on either side the designation would have been, "Machine gun in bush on left."

When the target has a linear dimension, that is a certain frontage over which fire must be distributed, its limits or the location of its flanks must be given, preferably by reference to prominent features of the terrain, on or very near to these flanks. For example, referring again to Plate 338:

1. "Range, 400. Dead tree to left front. Skirmish line extending right to road."
2. "Range, 500. Where road disappears over crest. Skirmish line extending from fence to right edge of small grove."

It will often be the case that there is no single, unmistakable prominent object in or very near to the target. In this case select the one most prominent, unmistakable object on the landscape, in the general locality of the target. If it is not at the same distance or nearly the same distance as the target, it should be as far off as possible. Having directed the attention of the men to such a prominent object, give direction (right or left) and the distance (in sights or fingers) from this prominent object to the target or the nearer flank of the target.

In order to designate a target under such conditions all men must be trained to measure lateral distances or frontages, by means of sight leaf or finger as a unit.

The units of angular measure to be used are: 50 mils, the apparent width of one finger or of one sight leaf. A width of one yard at a distance of 1000 yards would subtend an angle of one mil. Fifty yards, or $\frac{1}{20}$ of the range, would subtend an angle of 50 mils. Therefore an angle of 50 mils will be subtended by one foot at 20 feet; 5 feet at 100 feet; etc. In order to use the width of the finger or the sight leaf to subtend an angle of 50 mils, the finger or sight leaf must be held at a certain

fixed distance from the eye. (Plate 339.) We will show in the practical work, how to determine the proper distance these objects should be held from the eye. It is necessary to hold them at the same distance from the eye in each case.

If every man in the unit holds his sight leaf or finger the correct distance from the eye, and applies this unit of measure, all will obtain nearly the same results. A good rule to remember is: If we multiply the number of finger widths in a target by $1/20$ of the range to the target, we obtain the width or frontage of the target in yards. This is important as we shall see later in Distribution of Fire, in computing the strength of firing lines.

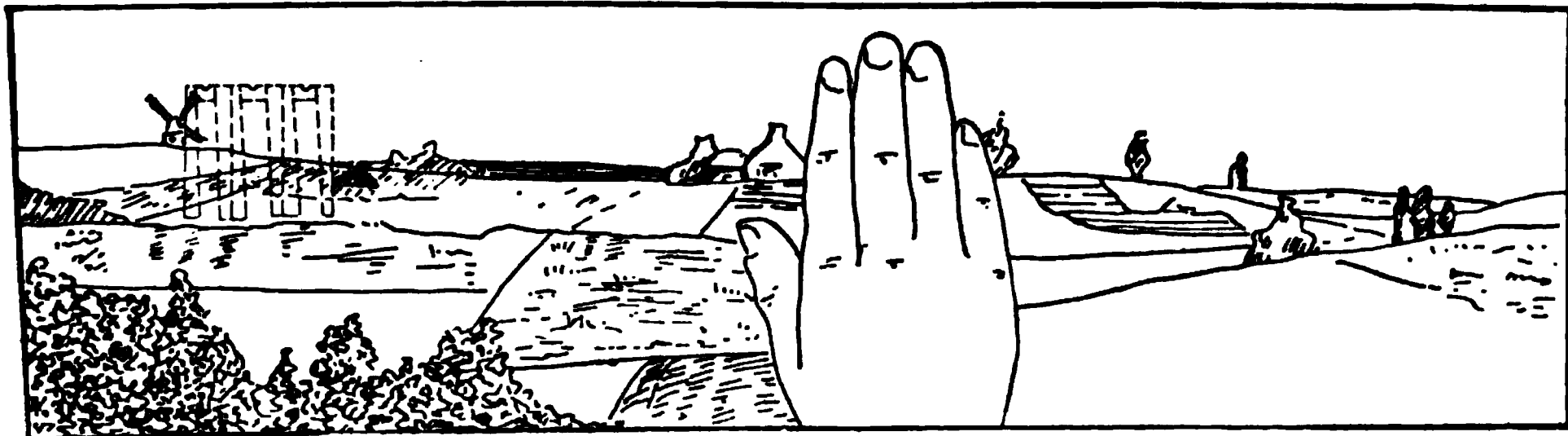


PLATE 340.—Measuring Frontage by Sight Leaf or Fingers.

With our men thoroughly trained in this system of measuring frontages we may designate both the position and extent of a linear target by measures expressed in sight leaves or finger widths as units. This system is not as satisfactory as that illustrated in the preceding examples, where the flanks of the target may be accurately located by direct reference to prominent features of the terrain. For no matter how well trained the men may be, time is consumed, and the opening of fire is delayed when it is necessary to make these measurements. The following examples will illustrate the application of this system of measurements. (See Plate 340.)

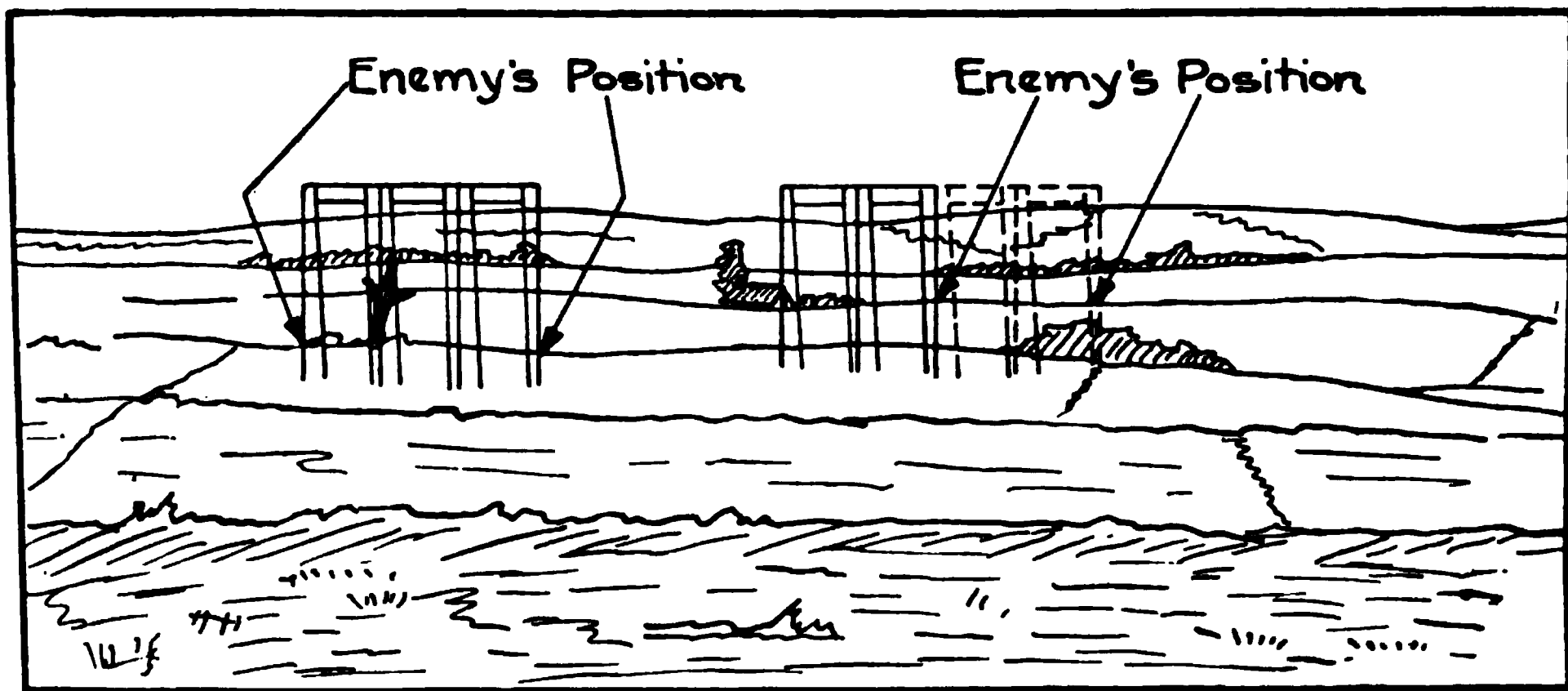


PLATE 341.

1. "Range, 500. Reference, windmill on far crest. Three sights right. Target, machine gun in bushes."

2. "Range, 600. Reference, ruined house. Four fingers right. Target, enemy patrol on crest."

In these examples the reference point is *not* very near to the target, hence the reference point and the target are each designated by name ("Reference," and "Target"), the distance between them being given.

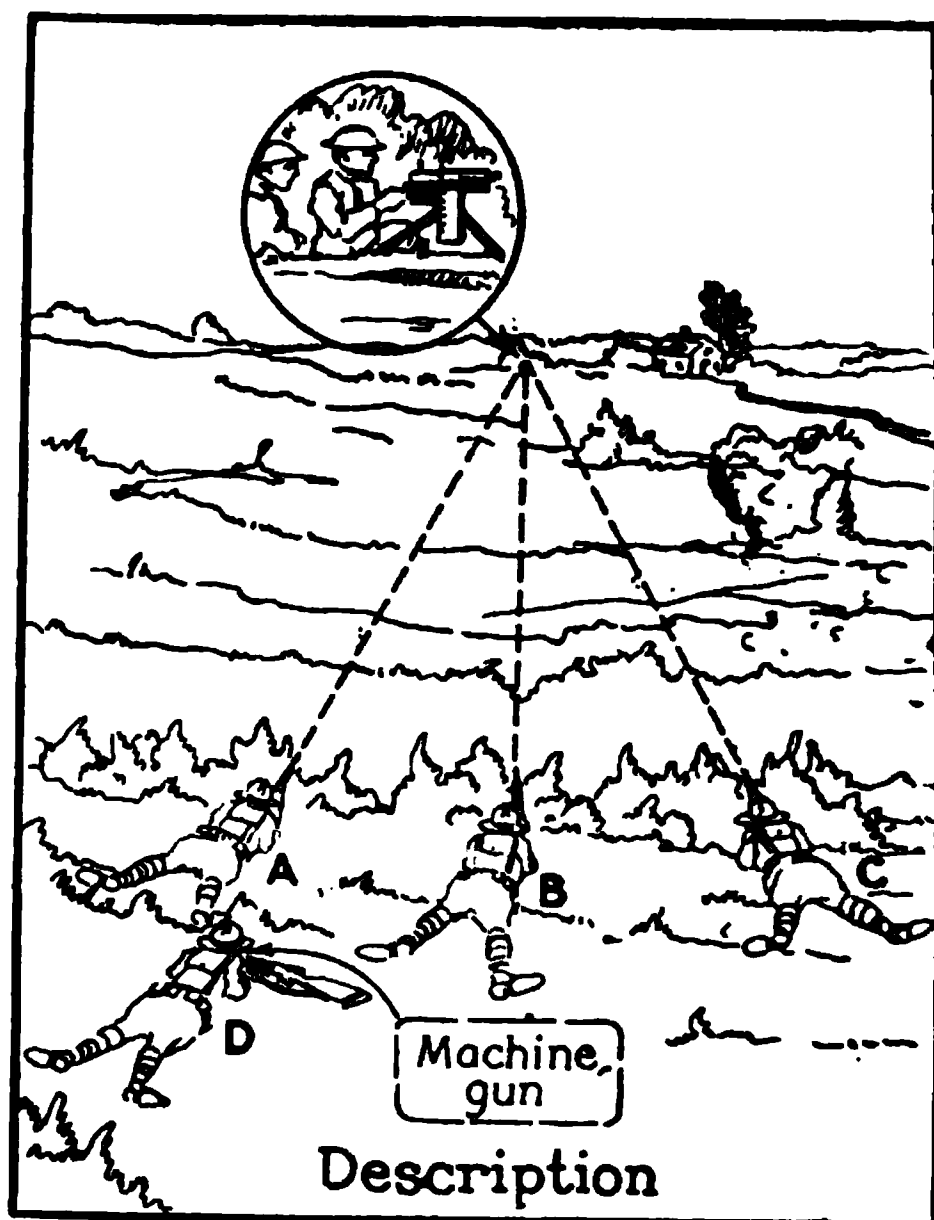
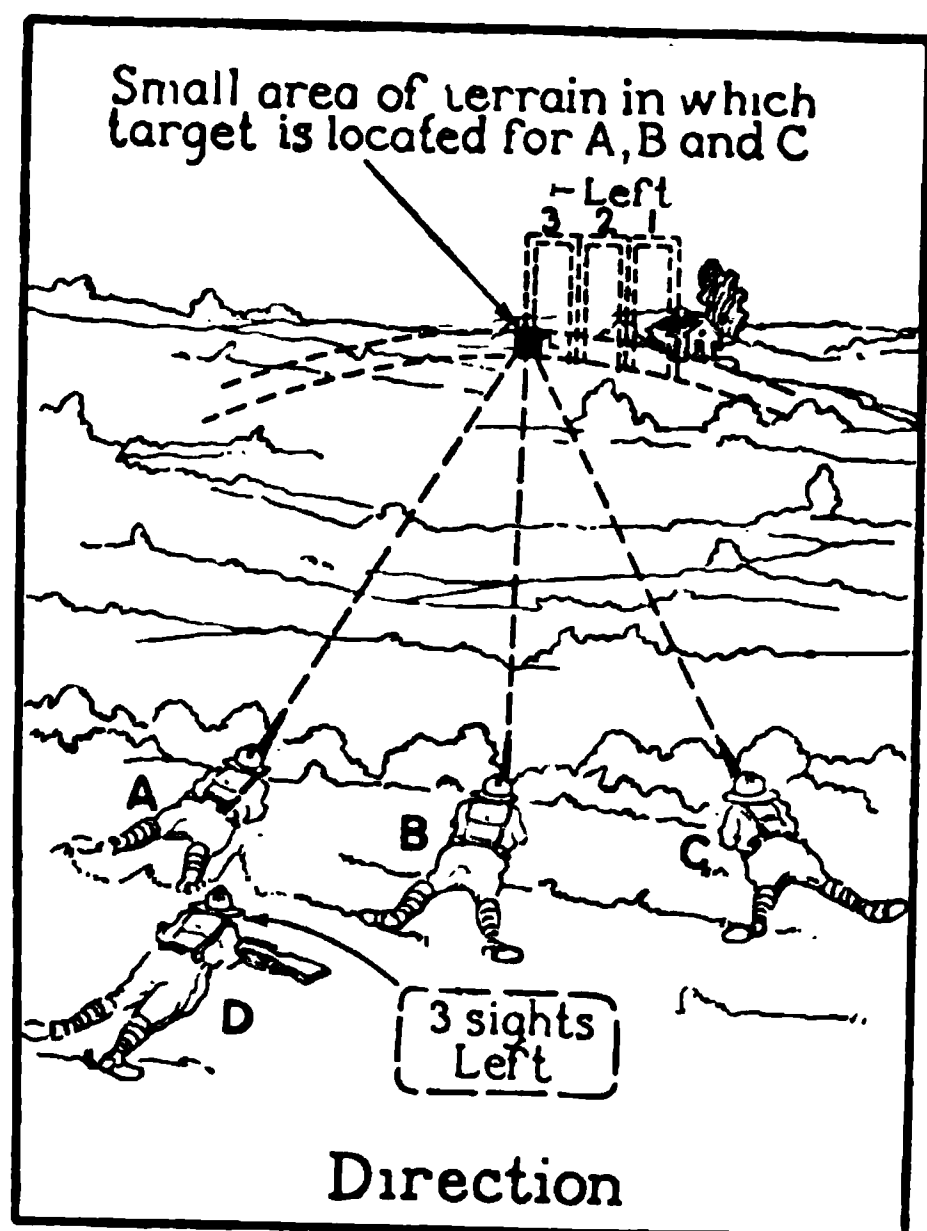
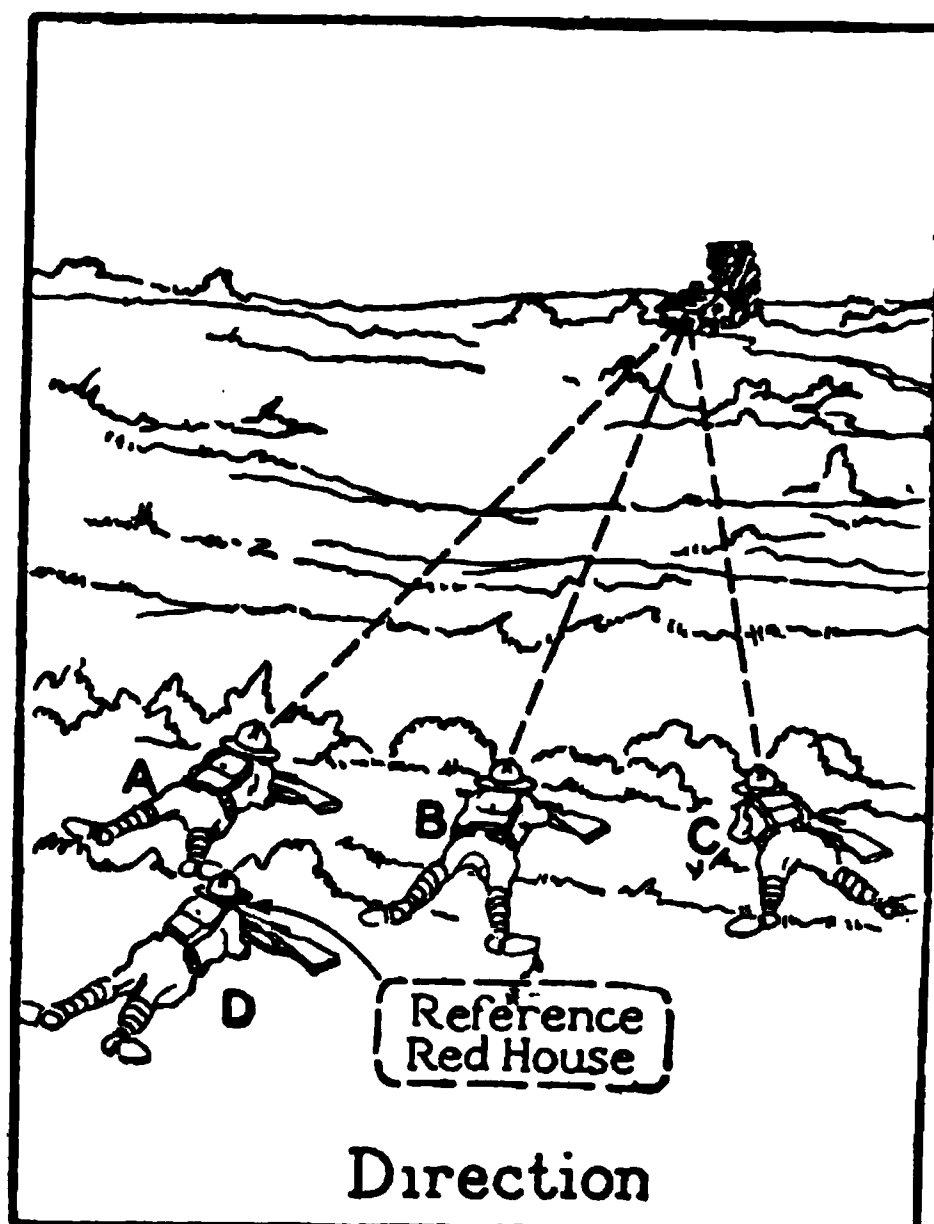
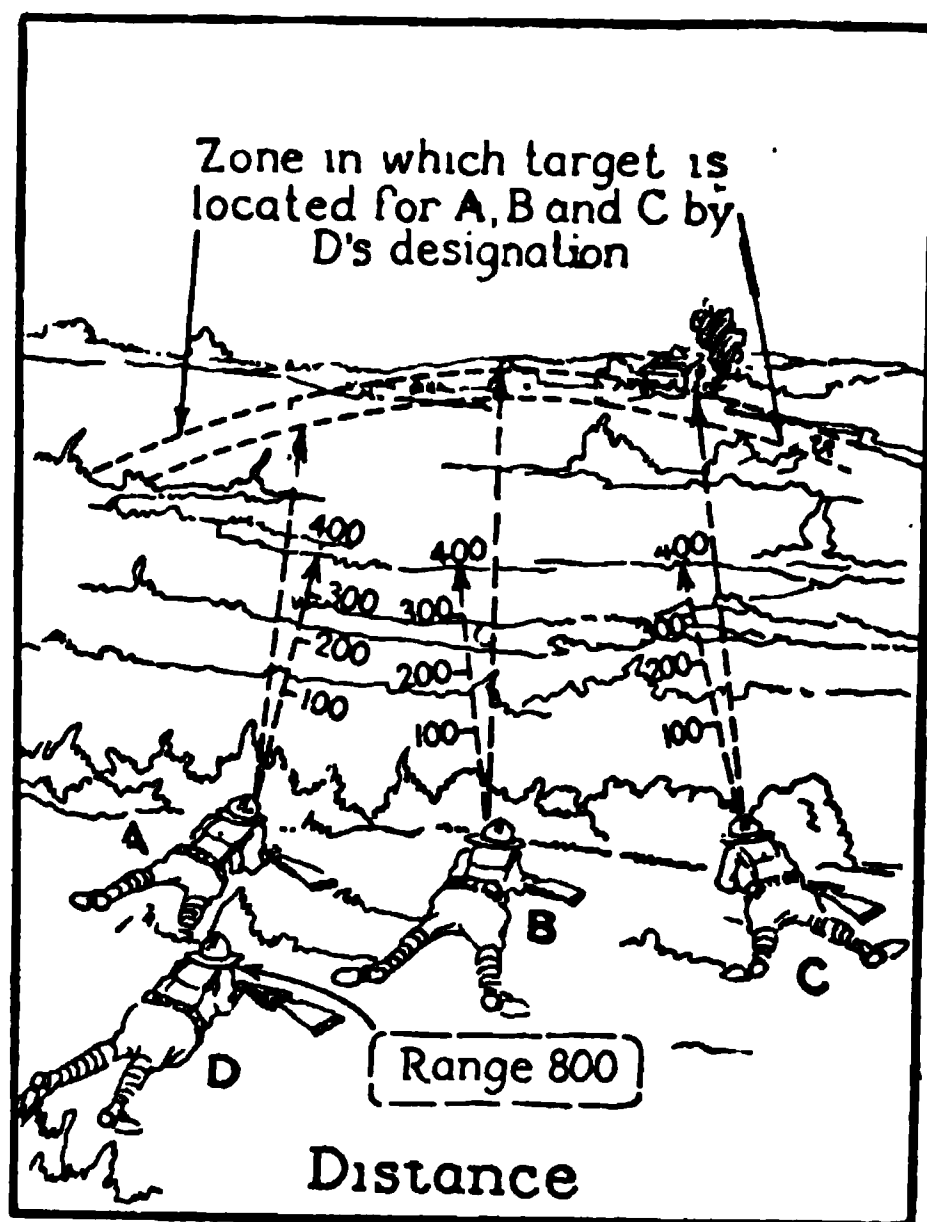


PLATE 342.—Target Designation.

In the two foregoing examples the target was a point. If it is a linear target, over which fire must be distributed, the flank *nearer* to the reference point is designated as before. The extent of its front is then designated in one of the usual units. This locates the *other* flank of the target, it being understood, of course, that the target extends *away* from the reference point. For example, referring to Plate 341: "Range, 800. Reference, gable of farmhouse. Two sights right. Target, enemy line just below crest, extending two sights right."

This designation is complete, and unmistakable to men who have been properly trained in this system. The range means always the range to the *target*, not to the reference point, which may or may not be at the same range. The reference point is quickly identified, and cannot be confused, as there is no other farmhouse in sight. "Two sights right" means that the near flank of the linear target is two sights to the right of the reference point. "Enemy line just below crest, extending two sights right," means that the target extends two sights from the flank *nearer* the reference point, *away* from the latter. The extent of front and the location of both flanks of the target are thus indicated as accurately as the prominent features of the terrain permit. Knowing the range to be 800 yards, one sight leaf covers a

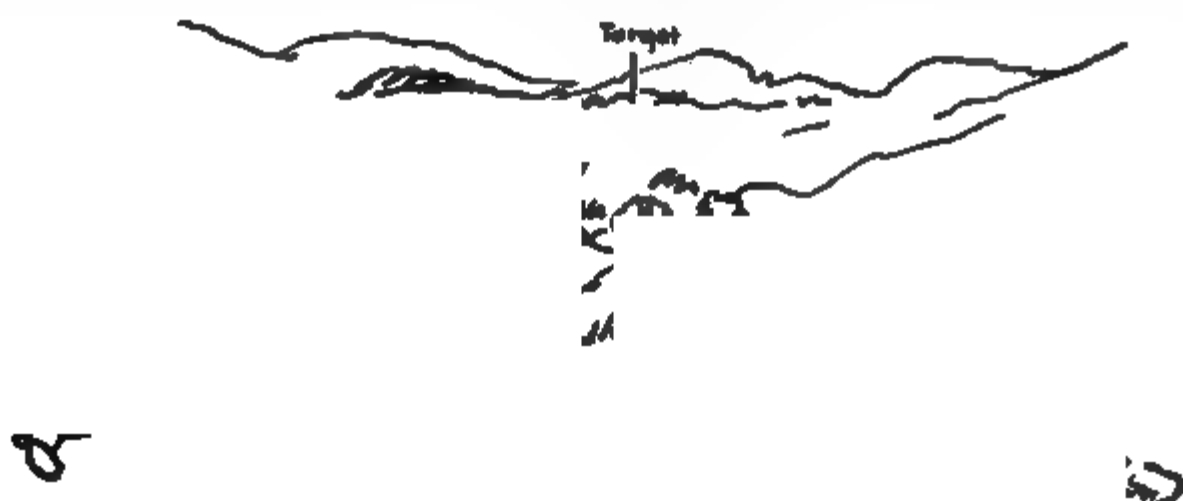


PLATE 343.—Physical Designation of Target.

front of $1/20$ of that range or 40 yards. Hence the front of the target (2 sights) is 80 yards. If it consists of skirmishers at 5 yards it contains 16 men. Thus the front of the target gives an indication of the strength of the enemy.

There is another case of target designation, where a prominent reference point lies *inside* of a linear target, but there are no other prominent objects by reference to which the flanks of the target may be located. In this case the extent of the target on either side of the reference point is given. For example, referring again to Plate 341: "Range, 500. Reference, dead tree to left front. Target, enemy skirmish line extending two sights right and one sight left."

c. *By physical indication.* Soldiers in action will designate a target with the arm. We must teach them to do this accurately, and in a manner which will supply as much of the necessary information as possible, as follows:

1. Signal the range. (Use arm signal.)
2. Point with the finger directed accurately at the target, the arm straight from the shoulder to the point of the finger.

The above method will give the distance and approximate direction. It will locate a more or less definite area of terrain. The enemy movement or verbal description will aid in picking up the exact location. One or two of the nearest men will locate the target and their fire will aid the others in locating the target. The rifle may be aimed at the target (especially from the standing or kneeling position) to indicate the position of the enemy. The range must be given.

If time and circumstances permit, adjust a rifle on the bayonet thrust into the ground, or any other form of rest, and aim it at the target. Have each man look through the sight. This will locate the target for them, *providing* the aim of the rifle is not changed during the process. If this means of indication is used it is well to check the aim of the rifle frequently. (Plate 343.)

Every man must be trained in target designation. The officer and non-commissioned officers are not the only members of the unit who may be called upon to designate a target. Private Zybylko, who can hardly speak a word of English, may pick up the target. He must be able to point it out to Corporal Jones—*i. e.*, lay his rifle on it, aim at it, or indicate it in some definite manner.

Every man must understand target designation and must be able to recognize the target from the designation given.

Officers and men must speak in the same language, that is use the same military terms and call the features of the terrain by the same names. "To our right from that stone pile," must mean the same direction to every one.

Careful training, constant practice, a high degree of discipline and teamwork, and a large amount of *common sense*, are necessary to the successful application of these principles in modern combat.

FIRE DISTRIBUTION.

Necessity for proper distribution. To gain and hold fire superiority, it is necessary that fire be distributed over the *whole* target. Otherwise the parts not under fire will shoot in great volume and accuracy.

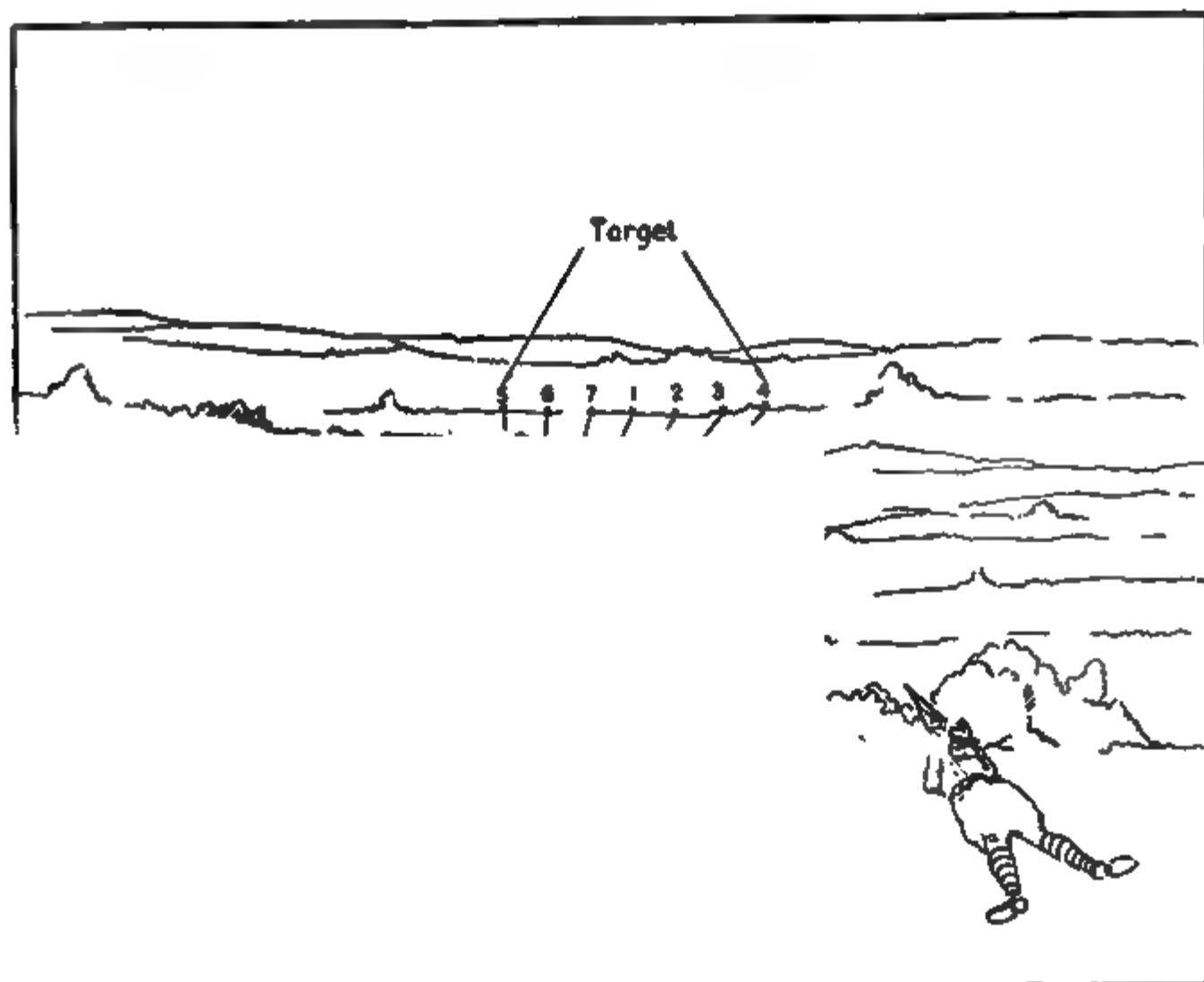


PLATE 344.—Fire Distribution within the Squad.

Distribution by traversing. If one man is firing at a target, he must traverse his fire over the whole target in order to properly cover it. If two, three or eight men are firing at a target, it has been proven by careful test, that they will obtain as good if not better results if they will traverse their fire over the whole target, as if they were alone. Each will actually be alone when in an extended formation. Each

will be in the general position occupied by his squad but will be separated from the other members of the squad and will be behind the best cover he can find.

Distributing the fire of the squad. The advantages to be obtained from this system of fire distribution as compared with any system in which the target is divided into parts are:

a. The men of the squad do not have to divide an indistinct distance on the terrain into parts.

b. A casualty in the squad will not leave a portion of the squad target uncovered. As long as there are one or two men left in the squad it can properly distribute its fire, by this system.

c. Even if the exact limits of the target are not well defined, the chances are still great that one or more men of the squad will cover the entire target with fire.

d. The accurate fire of the good shots, and the great volume of fire of the automatic rifle, are both distributed over the target.

e. There is a far greater probability that the indistinct portions of the target will be covered since all men of the squad traverse their fire over them.

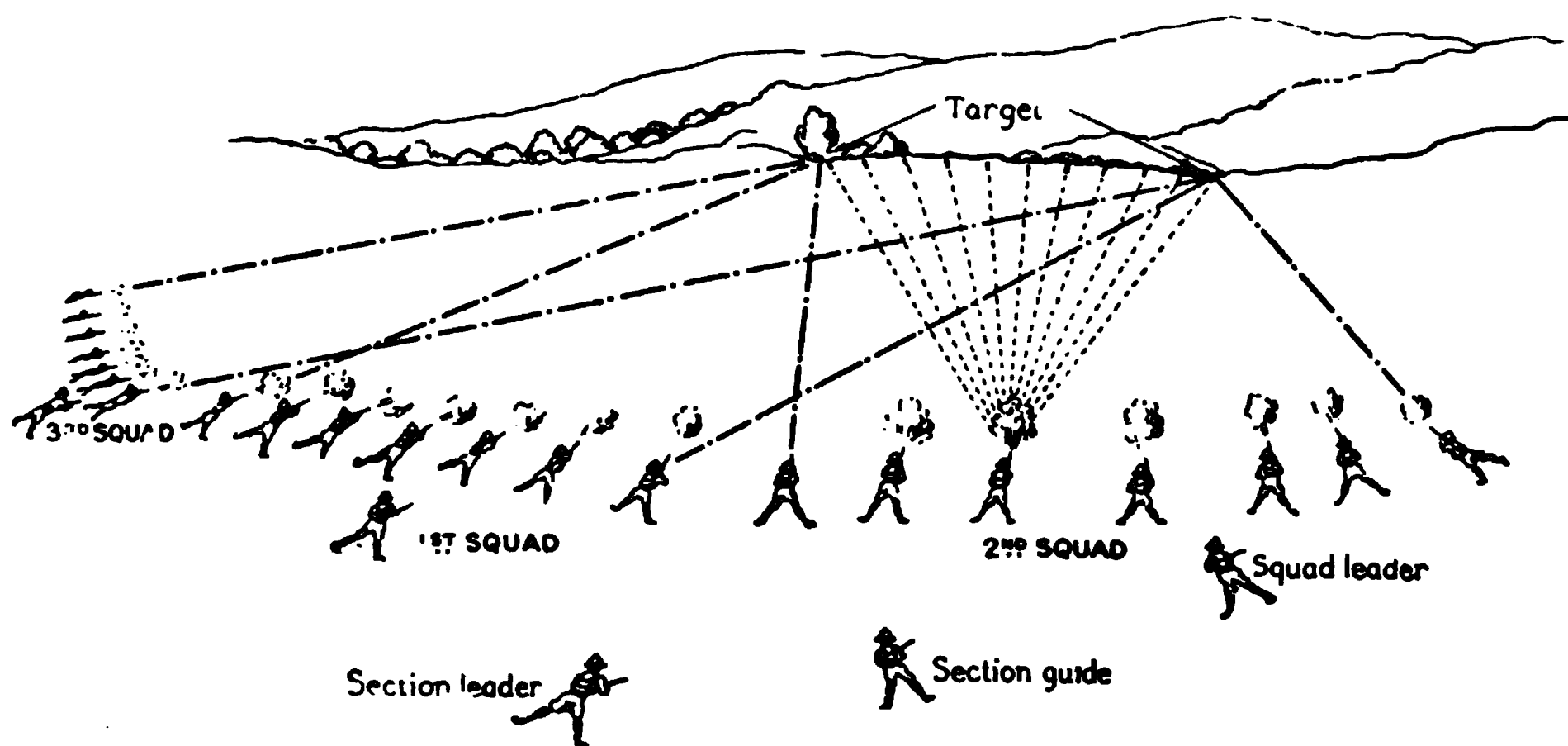


PLATE 345.—Fire Distribution within the Section.

f. It is a system which will insure distribution of fire over the entire front of the target, even when the individuals of a squad or the squads of a section are widely separated, and not under close control of their leaders, as it is unnecessary to give particular portions of the target to particular individuals or squads.

g. Movement of individuals or squads to more favorable fire positions does not in the least interfere with proper distribution, since each individual, whenever, or wherever firing, covers the entire target.

Summary. This system will work in all situations. Its application becomes a matter of training. It does away with the necessity for special orders in each case—no orders are required. Within the squad each man traverses his fire over the entire target. He begins at a point on the target corresponding approximately to his position in the squad, and traverses to his right, thence beginning at his left, across the entire target from left to right, and repeats.

Distributing the Fire of the Section.

The section is the fire unit. That is to say, a section is best used to attack one definite target. A section includes two or more squads, three according to present organization. Each element of the section, that is to say each squad, will cover the entire front of the target assigned to the section. (Plate 345.)

The advantages of this system of distributing the fire of the section are:

- a. One designation of the target will show it to all the men. Each man will not have to divide distance on the terrain into parts and remember those parts.
- b. One or more elements may cease firing and move to a better firing position as in advance by rushes, and yet leave no part of the target uncovered.
- c. If the exact extent of the target is not clear, the chances are good that one element will cover the part which may be missed by another element.
- d. The firing positions of some elements may make it impossible, because of some intervening object, for them to cover part of the target. The remaining elements will usually be in a position to cover these parts.
- e. The fire of one or two squads may be shifted to a new target and still leave the original target covered.
- f. The section may advance by rushes of squads, or fractions of squads, under cover of the fire of the remainder of the section who will keep the whole target covered.

Summary. As for the squad, so for the section, this system will work in all situations. It is simple, definite, requires no orders, and its application is merely a matter of training.

The section is a fire unit. It will generally be used to attack one target. Each man of the section will cover the whole target, distributing fire as laid down in the preceding paragraphs.

The platoon is a maneuver unit. It generally consists of two sections. If both of its sections are used to apply fire to a target, they act as separate units, each covering the entire target. Each section may be used to attack half of the platoon target if so directed by the platoon leader, but without orders to the contrary each section will cover the whole target. Each section acts in either case as a separate unit under the direction of the platoon leader, but each is ordinarily under the immediate control of its section leader.

FIRE DISCIPLINE.

What fire discipline includes. Fire discipline means the exact and correct execution of orders and instructions, as to the use of the infantry platoon weapons, and the conduct of the individual infantry soldier in action. It includes:

- a. Constant attention to the rapid and accurate transmission, and the intelligent and prompt execution of all orders and signals.
- b. The proper use of cover while in position and the correct execution of all movements.
- c. The careful setting of sights and accurate delivery of fire.
- d. Economy of ammunition.
- e. Replacement of casualties.
- f. Ability and willingness of the individual to act intelligently on his own initiative to help the accomplishment of the squad, section or platoon mission.

Means of Communication. Signals.

The voice is frequently insufficient for giving commands during fire and must be replaced by signals of such character that proper fire control is insured.

The signals used to transmit orders and firing data in the infantry platoon are those prescribed and illustrated in the Infantry Drill Regulations. They are of two kinds:

- a. Whistle signals. b. Arm signals.

There are two whistle signals; *i. e.*, the short blast and the long blast. The former means "Attention to orders," the latter, "Suspend firing." All other whistle signals during combat are prohibited.

Whistle signals are for the purpose of attracting the attention of the squad leaders. Squad leaders must listen for whistle signals and heed them. *The men must not.* The men must be so trained that they will not look around each time a whistle is blown. It is their duty to keep their eyes on the target and to devote their



Fig. 1
Range



Fig. 2
Are you ready?
I am ready



Fig. 3
Commence firing

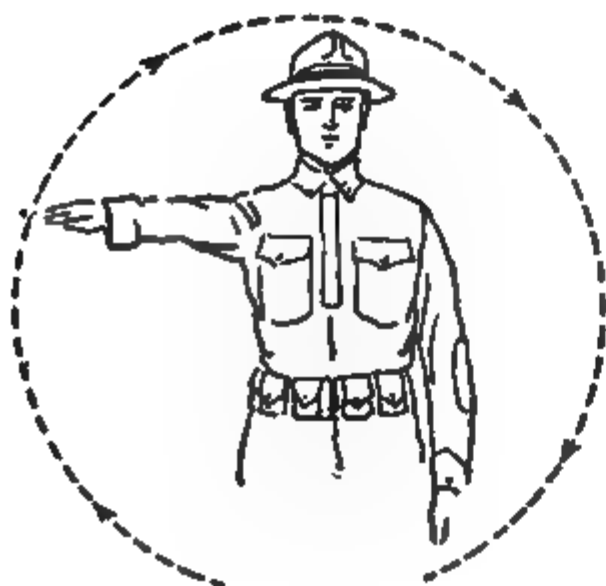


Fig. 4
Section

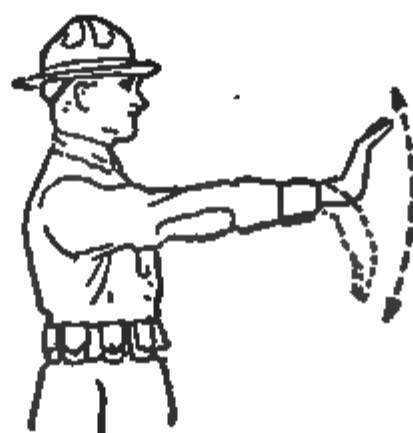


Fig. 5
Squad

Fig. 6
Rush



Fig. 7
New target



Fig. 8
Cease firing



Fig. 9
Suspend firing

attention to the delivery of an efficient fire. They cannot do this if their attention is distracted by the sound of a whistle.

Whistle signals are used only when the noise of firing makes it impossible to attract the attention in any other manner. When close to the enemy such signals will inform him that some movement or action is about to take place, and he will watch for it.

The arm signals in the Infantry Drill Regulations are for the control of both fire and movement. Great care must be taken that every member of the platoon is able both to understand and transmit these signals.

Visual signals are very useful in the control of the section or platoon in action, if they are properly used. They are dangerous if improperly used. Careful training and the rigid observance of the two following rules are essential:

a. If a signal is to be used it must be given properly, so that it can be read easily and correctly, even at the cost of danger to the sender. If he cannot expose himself sufficiently to give the signal clearly and correctly on account of danger from the enemy's fire, he must use some other means of communication.

b. A signal received must never be obeyed until it has been repeated back to the sender. If the sender does not signal back a correction, it is understood to be correct, and will be obeyed. The duty of watching for, receiving, repeating back and seeing to the execution of the signal by the squad, falls upon the squad leader. Every man must be able to act as squad leader if necessary.

The squad leader must ordinarily give his orders to the members of his squad by word of mouth. When the squad is deployed at extended intervals it may be necessary for the men to pass these orders along the skirmish line. In doing this they must always state the source of the order, thus: "*Corporal Jones* said 'Fire faster;'" "*Corporal Jones* said 'Suspend firing.'"

It should be remembered that signals are substitutes, to be used when the voice cannot be used for giving commands. Section leaders will use the voice if possible, or unless the noise of firing, the great separation of the unit, or the closeness of the enemy prohibit.

Runners. Under some conditions in action, such as at night, in smoke, fog, etc., it is impossible to use arm signals, another means of communication must be employed. This method is the use of messengers or runners.

Buglers, runners, and members of the platoon must be thoroughly instructed in carrying verbal messages.

All messages sent by messenger or runner must be brief and to the point. A verbal message which is subject to a fatal change in sense by the omission of a single word must be avoided. For example:

"The first section will *not advance north* of Rock Creek."

This message is subject to a complete change of meaning by leaving out the word "not," and should be given: "The first section will *halt south* of Rock Creek."

A verbal message should include the name and address of the person to whom sent, and the name of the sender, for example:

"To Sergeant Smith, First Section, from Lieutenant Jones."

"The first section will halt south of Rock Creek."

To properly fulfill their duties as messengers and runners, men must observe the following rules regarding the transmission of verbal messages:

a. Repeat the message to the sender as soon as it is received.

b. Verify the name of the person to whom sent and any special information as to his location.

c. Make certain that the message is delivered to the right person, announce the sender, and repeat the exact message. (See message above.)

d. Return to the sender with the reply or report the delivery of the message, unless ordered otherwise by the sender.

Concealment. The Use of Cover. Individual Movement.

The great importance of proper concealment and use of cover must be recognized. The success of infantry is gained by pushing *man power*, assisted by covering fire, toward the enemy, until it is possible to finally close with him, and destroy or capture him, or force him to retreat.

Each man must be thoroughly imbued with the idea that the advance of his unit and the effectiveness of its fire are of *greater* importance than the question of individual cover, but he must be so trained that when in position and in moving forward he will take every advantage of natural cover.

There are laws which govern the use of cover and they must be thoroughly impressed upon the men. These laws are discussed under Scouting and Patrolling.

The simple rules for picking cover, for using cover, and for individual movement are thoroughly covered under Scouting and Patrolling.

As a member of a fire unit the individual soldier must move and use cover to the fullest extent, but he must keep constantly in mind the necessity of being able to *deliver effective fire* on the enemy, and of moving as part of the squad, section and platoon team.

Sight Setting and Delivery of Fire.

Careful sight setting is a matter of training. Any well-trained and disciplined unit should be able to set its sight correctly within ten seconds after the order is understood. To set the sights press the thumb of the left hand against the slide, leaf down. Loosen the slide with the right hand and move it up or down by pressure with the left thumb. Guide and stop the movement and tighten the slide in position, with the right hand. Units should be practiced repeatedly in setting sights, both by signal and command, and in every possible position.

The accurate and correct delivery of fire requires:

- a. That each man know the range.
- b. That he set his sight properly.
- c. That he know the location and extent of the target.
- d. That he be in the correct position to fire easily and comfortably.
- e. That he accurately align his sights, hold his breath, and squeeze the trigger so as not to disturb his aim.
- f. That he reload promptly.
- g. That he traverse his fire carefully over the whole target.

Economy of ammunition. Economy of ammunition requires that only that amount of ammunition be used that is necessary to apply the most effective fire to the target. There is a correct rate of fire in rounds per minute for each range. An approximate rule to apply in determining this rate is to subtract the number of hundreds of yards in the range from 13. Thus the rate of fire for 800 yards would be 13 minus 8 or 5 rounds per minute. This rule holds up to 1000 yards. Beyond that range effective fire can only be delivered at the rate of 2 or 3 shots per minute.

With the automatic rifle the rate of fire is considerably faster. Up to 600 yards the proper rate is from 10 to 50 shots per minute, semi-automatic fire, *i. e.*, single aimed shots. Automatic fire in bursts of from 3 to 5 shots may be used against very large distinct targets, not more than 100 yards away. At ranges from 600 to 1200 yards the rate of fire for the automatic rifle should be the same as that of the rifle except when the target is large and distinct in which case a higher rate of fire may be used. The fire of the automatic rifle is not very effective at long ranges.

Repeated experiments have proven that to increase the rates of fire above those given will, with average marksman, not only use more ammunition but secure fewer hits. This additional ammunition is therefore worse than a total loss. Every man must know this, and as a matter of training must fire at the correct rate for each range, unless ordered to use a slower rate.

Replacement of casualties. The replacement of casualties by substitutes should be a matter of training and routine. It is an element of fire discipline.

In particular each section and squad must have a leader, and the automatic rifle must be kept in action. The first replacement for the automatic rifleman is his substitute, and thereafter any member of the squad who is qualified to operate the weapon. The second in command of the squad is No. 4. rear rank. The squad leader is responsible for keeping the automatic rifle in action. The section leader and section guide are responsible for seeing that a substitute leader is designated for each squad when necessary.

CONTROL OF FIRE.

Fire control embraces the issue of orders to initiate a fire action, and securing the proper application of fire. Specially it includes application, observation and adjustment of fire. The infantry squad and section are organized and deployed for combat with a view to facilitating the control of fire.

FIRE CONTROL WITHIN THE SQUAD.

Experience in combat proves that one man can personally control the fire of eight men. The infantry squad leader can be expected to control the fire of his squad.

To properly apply the fire of his squad the leader must convey to each of his men by appropriate orders, the following information:

- a. The range, in order that sights may be properly set.
- b. The target to which fire is to be applied, and exactly where it is located.
- c. The extent of the front of the target and the location of its flanks, in order that fire may be properly distributed over the target.
- d. The time to open fire.

It will be noted that a proper target designation covers the first three items of this essential information.

Responsibilities of the Squad Leader.

If the squad is acting alone, or separated by a considerable distance from the rest of the section, the squad leader may have to make the plan on which his fire orders are based. In such a case his problem is the same as that of a section leader.

When the squad is acting as part of a section the squad leader will have only to transmit the fire orders of the section leader and enforce their execution.

The fact that the target has been designated by the tracer bullets of the scouts does not relieve the squad leader of the responsibility for properly applying and controlling the fire of his command. One or more of his men may not have observed the tracer bullets. Another may have the wrong range. A proper order will give to all the men of the squad the information to properly apply their fire.

The time of opening fire will often be determined by circumstances, for example the action of the enemy, or when the men locate the target. There will, on the other hand, be occasions when it is desirable that the squad open fire together, on the order of the squad leader. This order would usually be, "FIRE AT WILL."

In the confusion of battle, with the squad deployed on a front of 40 yards or more, it will at times be impossible to give even a simple order such as this simultaneously to all men of the squad. In this case the squad leader enters the firing line, gives orders direct to the men nearest him, and causes them to pass the orders on to the others.

When the squad is acting as a part of the section, the squad leader must be constantly on the alert for signals from his section leader.

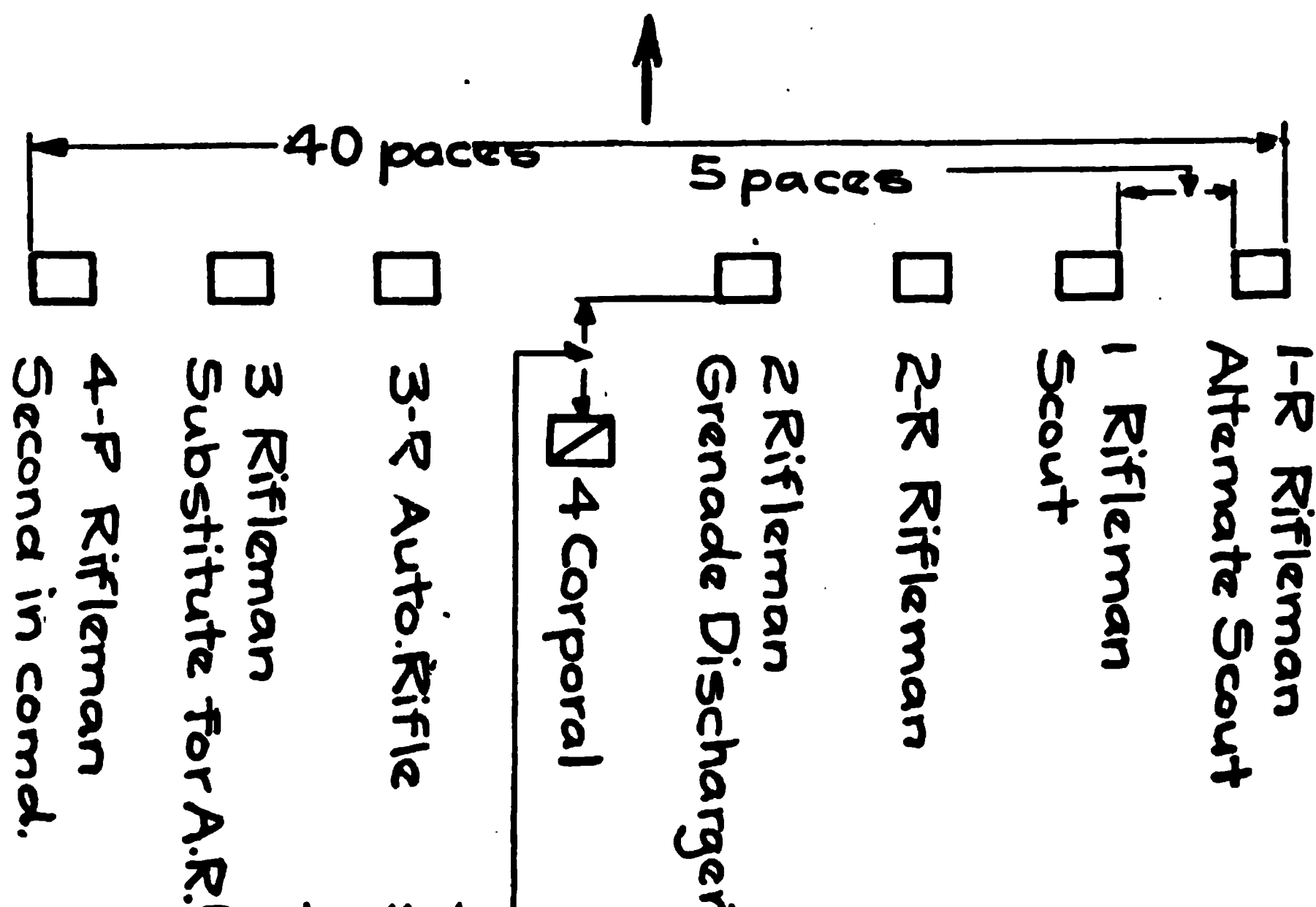
When he is so ordered, or when he sees an opportunity to advance, the squad leader must be able to promptly stop the fire of his squad. This is accomplished by the order, "CEASE FIRING," followed by sharp repetitions to men who do not obey promptly, thus: "Jones! Cease firing."

Especially upon the completion of a movement, and at other times as necessary, the squad leader must see that his men are in proper positions for effective fire,

not too close to each other, etc. A verbal caution such as, "Jones, move over to your right," or "Jones, get behind that tree," will place a man in a better position.

Sights often slip during firing, and they should be checked occasionally.

Position of the leader. The leader must take a position from which he can best observe the fire of his squad, and properly direct its actions. Such a position will usually be in rear of his squad, near the center, and at a sufficient distance to allow him to hear and see, and be heard and seen by the men on the flanks. In this position, and when employed in directing the fire of his men the squad leader does not himself fire. Fire control and fire discipline are his primary duties. To fire himself is of less importance and must not interfere with this primary duty.



Such distance as he can:

1. See and control his squad.
2. See the target.
3. See Section Leader.
4. Be covered from enemy's view and fire.

PLATE 347.—The Squad engaged with the Enemy.

It is of special importance that the squad leader should properly direct and control the fire of his automatic rifleman and, if grenades are being used, that of his rifle grenadier. The deployment of the squad is such as to provide for this, since these two men are near the center.

In Plate 347 the squad leader is shown in the position from which he can ordinarily best control the fire of his squad. The position in any case should be that which best fulfills the following conditions:

1. The squad leader should see and be seen by each man of his squad.
2. He should see the target.
3. He should see and be seen by his section leader.
4. He should be covered from the enemy's view and fire.

In the positions indicated the two men nearest to the squad leader are the automatic rifleman and rifle grenadier. If the control of the entire squad is difficult, the leader will at least be able to control these two important weapons. The substitute automatic rifleman is on the left of his principal, where he can most easily and quickly replace him. On the left of the substitute automatic rifleman is the second in command of the squad, who from this position can best assist in controlling the men. In the advance he is usually the last man to move, supervising the advance of the men remaining when the squad leader himself has advanced. He then advances and takes position at the proper interval on the left of the squad.

The scouts, if present, are on the extreme right of the squad. At least one scout will usually be absent, or will join the squad after its deployment. It is therefore better that the scouts should be on the flank, where their leaving or joining the squad will not change the intervals at which it is deployed.

Observation of fire by squad leader. Having given his fire orders and engaged his squad, the corporal must observe the fire and adjust any errors that are noted. Such is his duty in the control of fire. He should note all errors of adjustment in the fire of the squad as a unit, or in that of any individual. For example: Careful

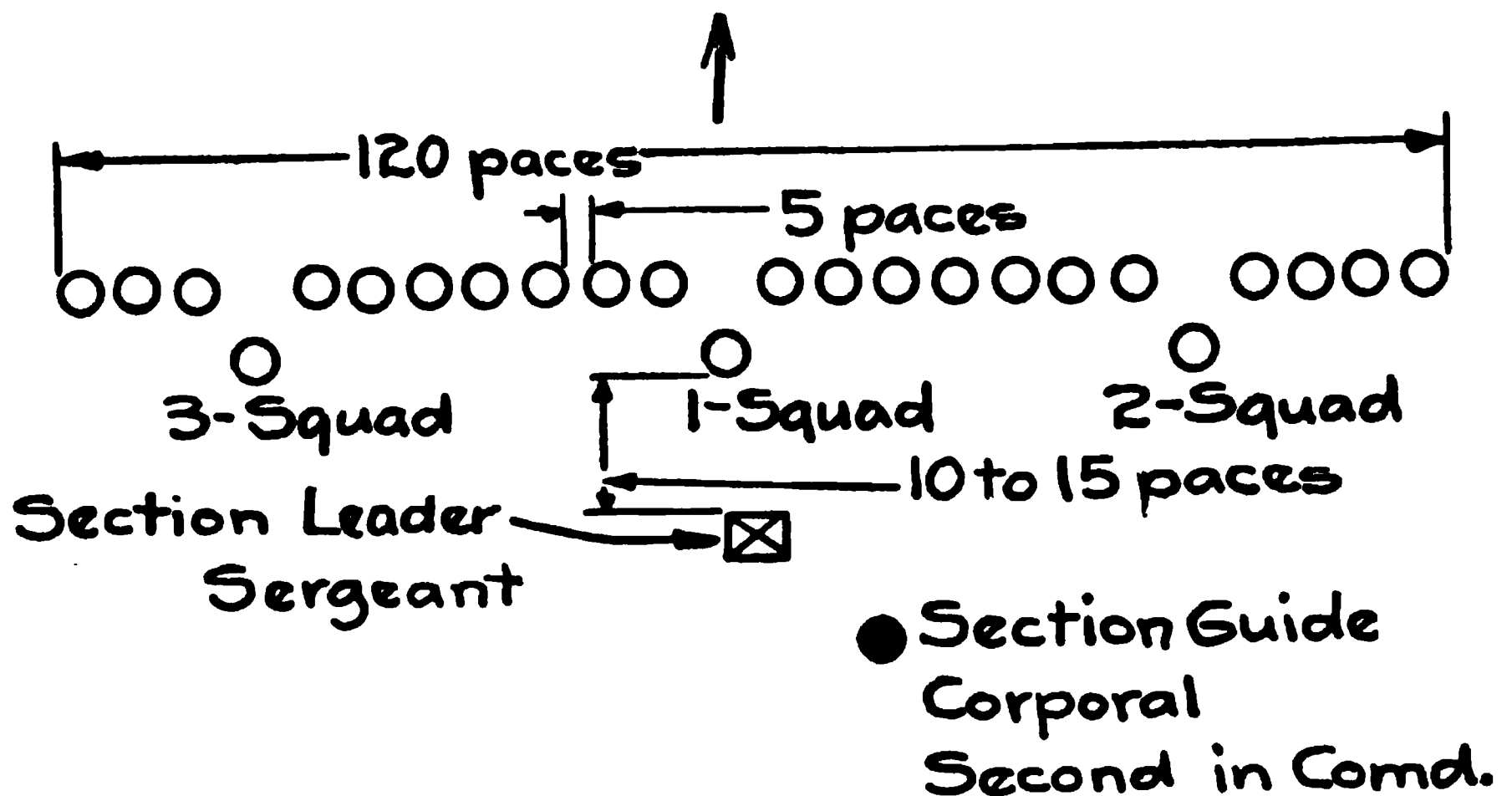


PLATE 348.—Section engaged with the Enemy.

observation on the part of the squad leader will detect the continual short shots of a man who has the wrong range. By watching his automatic rifleman he can tell whether he is firing continually at one spot, or distributing his fire properly over the entire target. A recruit may be so concerned with keeping himself covered that he merely pokes his rifle over the lip of a shell hole and fires into the air. Old targets may extend or contract their fronts, or new targets may appear. The men engaged in firing are apt to overlook such changes, but the squad leader should not fail to observe them.

Adjustment of fire by squad leader. Any adjustments that may be necessary, either as a result of errors or carelessness on the part of the men, or by reason of changes in the target or new targets, must be promptly made by the squad leader.

The squad leader may make these adjustments by verbal orders. Or he may enter the line and adjust the fire of an individual by personal contact, pointing his rifle, causing him to reset his sight, pointing out a new target, etc. For example: The squad leader perceives a burst of fire coming from a stone pile to the right of the target at which his squad is firing. He moves up alongside his automatic rifleman, and orders as follows: "Same range. Fire on automatic in that stone pile" (pointing it out).

Adjustment of fire by the squad leader involves three elements:

1. *Correction or change of direction.* This will be required if any man is firing on the wrong target, or if a new target appears, as when individuals of the enemy filter forward, or otherwise change position and establish a new target. This adjustment requires a new designation of the target.

If a member of the squad has failed to pick up the right target from the leader's verbal designation, it may be necessary to adjust his fire by physical contact, that is moving up to the man and showing him the target, or pointing his rifle at it.

If the entire squad has a wrong direction of fire, or it is necessary to shift to a new target, it may be difficult in the confusion of combat to simultaneously adjust the fire of the whole squad. In this case the leader should first direct the fire of the automatic rifleman, and subsequently that of the other men as quickly as possible.

2. *Correction or change of range.* This adjustment, like the preceding should be made by giving a new range. For example: "Jones, cease firing. Range, 800." The leader then sees that Jones resets his sight to the range indicated.

3. *Correction or change of distribution.* A redistribution of fire may be necessary either as a result of error, or by reason of changes in the target.

The man may not understand the designation of the target. If so it should be redesignated for his benefit. If he has not understood a verbal designation it may be redesignated physically. For example: The leader may point the man's rifle at one flank of the target, and direct him to measure two sights "in that direction" (indicating). If by reason of excitement or nervousness a man does not properly distribute his fire, the leader should steady him by a caution: "Jones, traverse over the entire target." The leader then watches to see that Jones does as ordered.

FIRE CONTROL WITHIN THE SECTION.

The section leader is charged with the direct control of his section during all phases of the combat.

As the section usually includes 24 men and deploys for fire over a front of at least 120 yards, the section leader cannot personally direct all of his men. He exercises control through his three squad leaders.

The leading section will apply fire to the target as soon as the enemy is developed. The action of the support section will usually be to seek a covered position. Thence it works forward to a position favorable either for fire or assault, preferably on a flank of the target. Or it may be employed to reinforce the leading section in a frontal attack by fire and movement, if so ordered by the platoon leader.

In any event a section leader will eventually have the duty of applying the fire of his section to a target, and observing and adjusting this fire.

To properly apply the fire of his squads to the target the section leader must give to his squad leaders by appropriate orders, the following information:

a. The range.

b. The target to which fire is to be applied, and its exact location.

c. The extent of the target, and the location of its flanks.

He must make certain that each squad leader knows the range and identifies the target, thus only can he be sure that the fire of the section will be effectively applied.

If the section enters the action deliberately the leader may also be able to control the time of opening fire.

The section guide assists the section leader in the first application of fire and its subsequent observation and adjustment.

Position of the leader. To properly control the fire of his section the leader should take the position which at any time best fulfills the following conditions:

1. The section leader should see and be seen by his squad leaders. The squad leaders may be from 30 to 75 yards apart.

2. He should see the target.

3. He should see the section.

4. He should see the platoon command post.

5. He should be covered from the enemy's view and fire.

6. He should be able to see to his flanks, and see the adjacent units.

The position which best meets these requirements will usually be some distance in rear of and near the center of the section. (Plate 348.) Exceptionally it may be on a flank. As no one position will in every case best meet all these requirements the section leader must use his judgment in selecting the one which is most favorable. His section guide may assist in observation, for example, take a position from which he can see the platoon command post.

The section leader guards the flanks of his command by personal observation. In some cases he may use scouts for this duty. As the section is a fire unit, and not a maneuver unit, it can protect its own flanks only by observation, and by the fire of the flank squad.

Transmission of orders. The problem of transmitting his fire control orders is a more serious one for the section leader than for the squad leader, on account of the greater front over which the unit is deployed.

If under cover the squad leaders may be assembled. Before deployment the section leader can make himself heard to all members of the section. When the section is deployed and committed to the fire action verbal orders to the entire section will usually be impracticable. In this case the section leader exercises fire control by: (a) Going in person to his squad leaders; (b) Visual signals; and (c) Tracer bullets.

The section leader and guide are both equipped with tracer ammunition. From a suitable command post the leader (or his guide) will be able to use tracer bullets for target designation, firing over the heads of the section, or through a gap. Or one of them may move into the line for this purpose.

A signal, "Range, 700," followed by pointing to a locality at which the guide is firing tracer bullets, will convey a definite fire order to a squad leader a hundred yards away.

Observation and adjustment of fire by section leader. Having put his unit into action the section leader must continually observe the conduct of the section, the target, and the fire effects on both sides. He must be constantly alert for any evidences of improper adjustment, and take prompt measures to correct them. He must note any changes in the target, or new targets appearing, and see that the fire of the section is properly applied and adjusted thereto.

Errors in adjustment include:

1. Incorrect range.
2. Wrong direction.
3. Faulty distribution.

On ordinary terrain the impact of a number of rifle bullets may be observed. In any case the tracer bullets of the scouts are an indication of the locality in which the bullets of the squad are falling, and give notice of any errors in range, direction or distribution. Knowing what to look for and where to look, and not being under the necessity of personally supervising the conduct of individual riflemen, the section leader will often be able to note errors in range or direction which his subordinates closer to the line do not see.

Range should be corrected by new range designation. The section leader may desire to know the range that a squad is using. A simple signal to the squad leader will elicit this information, thus: Place the heel of one hand on the fist of the other, palm towards the person signaled. This means, "What range are you using?" This information will often be necessary to check errors and give correct ranges.

Incorrect distribution is frequently the result of incorrect target designation, or a designation not understood. A tracer bullet fired at each flank of the target by the section guide will re-outline it. The squad leaders should be always on the alert for such signals. If necessary the section leader calls their attention, using his whistle. If one flank of the target is not being covered, a tracer bullet fired at that flank, and a signal to the squad leader, "Shift your fire to the right," will correct this error.

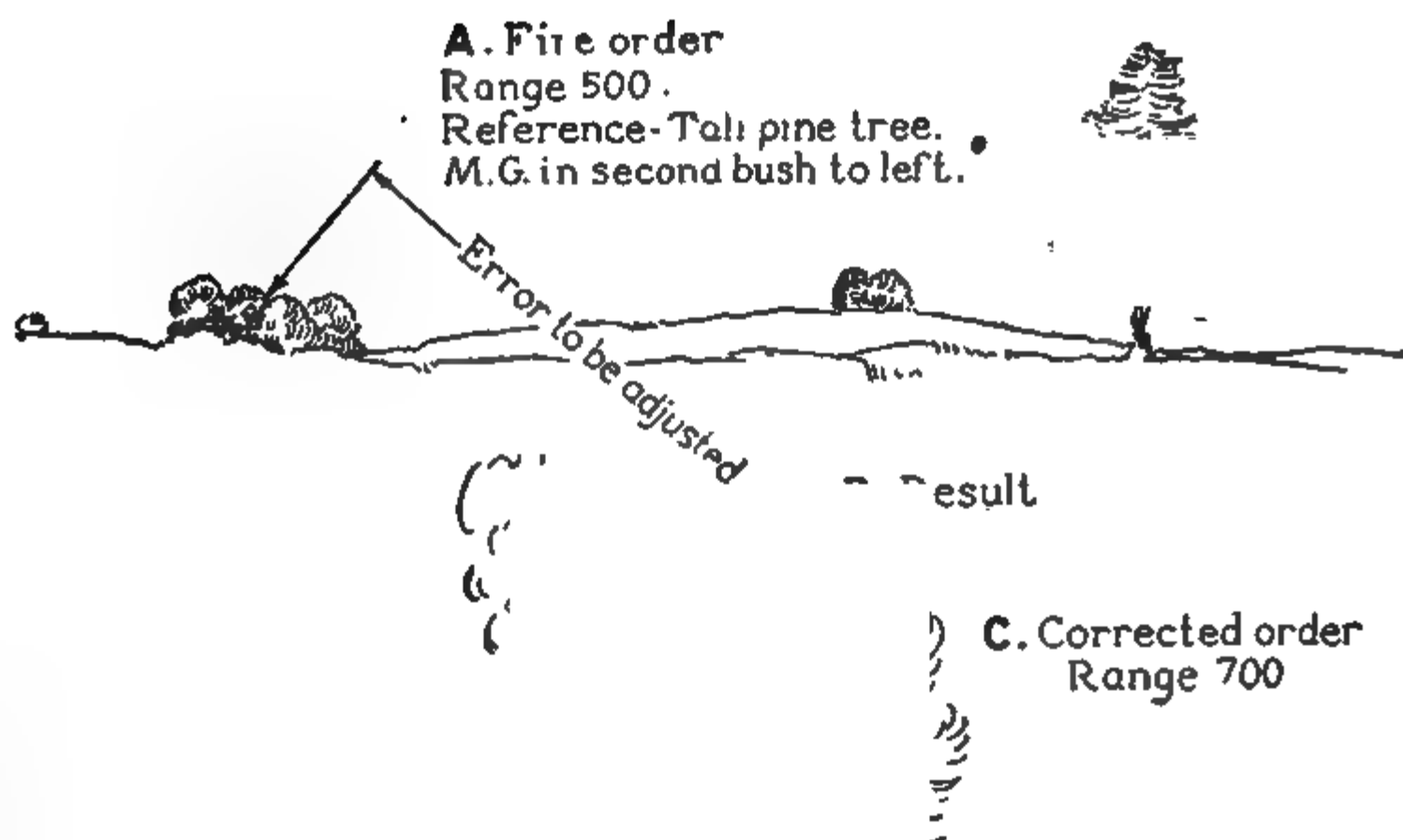


Fig.1 ERROR IN RANGE

A. Fire order

Reference-Tall pine tree
M.G. in second bush to left

Fig.2 ERROR IN DIRECTION

PLATE 349.—Adjustment of Fire.

The signal is given by extending the arm, and swinging the palm of the hand in the direction in which the shift is to be made. Verbal orders are given by the section leader moving over to the squad leader's position, or a message by the section guide. Or the limits of the target may be physically designated to the squad leader by the section leader or guide.

If the leader observes that fire is being applied to a wrong target he should at once check this waste of fire power by ascertaining which squad is in error, and correcting same. This may be done by observation, or by visiting the squad and personally checking its fire. Physical or mechanical (tracer bullet) designation will usually be the best method of indicating the proper target. At times a signal to the squad leader, "Shift your fire to the right," will call his attention to his error, and the fire of the remainder of the section will indicate the proper target.

From his observation of the enemy and his grasp of the situation as a whole, the section leader should be able to perceive when fire should be shifted to a new target, to meet new developments. Usually a shift of fire should be made a squad at a time, the new designations being conveyed successively to the squad leaders by order or signal.

CONTROL OF MOVEMENT.

Musketry includes not only the proper application of fire to the target, but also the movement of the fire units in advancing the attack to a position favorable for an assault. The subject thus includes the two elements which make up the combat tactics of the fire unit, both in attack and defense, to wit: *Fire and movement*.

The movement considered is that which takes place *within the zone of effective small arms fire* (rifle, automatic rifle and machine gun). It is accordingly movement *in the immediate presence of the enemy*. At different stages of the advance this movement may be:

- a. Out of sight of the enemy, and defiladed or protected against his fire.
- b. Out of sight of the enemy, but exposed to his indirect or unaimed fire.
- c. In sight of the enemy, and as a result directly exposed to his aimed fire.

The control of movement, or fire maneuver, will be considered under these three headings.

a. *Movement out of sight of the enemy and also protected from his fire* will be that which takes place in low ground, on defiladed reverse slopes, in or behind dense woods, villages or buildings affording concealment and cover.

Columns are more easily controlled than line, and can better utilize cover. Hence the movements of the fire units in such situations will usually be in small columns.

The section column (see I. D. R.) is a suitable formation for movement in open, defiladed terrain. The squads of the section follow each other in their usual order, each in column of twos. (Plate 350.) To properly control the movement the section leader moves at the head of the column, where he can be seen and heard by his three squad leaders, each of whom marches at the head of his squad.

The section guide follows in rear of the section. In this position he can keep the column closed up and prevent straggling, maintain proper formations and discipline, and watch for and transmit orders or signals from the rear. He checks such breaches of fire discipline as dropping equipment, carrying equipment improperly, straggling, talking when silence is demanded, etc.

The section column is very vulnerable to a sudden burst of aimed fire, especially of machine guns. The long, narrow beaten zone of the machine gun, combined with its great volume of fire, might enable it to almost annihilate a section column, taken by surprise, before it could change its formation. The column is much less vulnerable to fire from the flank. Nevertheless it is a bad formation in which to be caught under aimed fire from any direction.

Section column is accordingly employed for better control and greater facility of movement in ground where it is not likely to be subjected to rifle or machine gun fire. To guard against surprise the section leader must provide for reconnaissance to the front and flanks. If there be other units on the flanks, abreast of the column, they may provide security in those directions, but reconnaissance to the front should never be omitted. The scouts of the section are utilized for this purpose, forming a small advance guard at a suitable distance. The leader should have visual, and if practicable, verbal communication with his scouts.

Section column is not a suitable formation when exposed to artillery fire, as the burst of a single shell might involve the entire column. When moving through dense woods, underbrush, or broken terrain, the section column is not always suitable, as there is a tendency for the two files to separate in picking their easiest route of advance, thus forming two columns of files, each containing portions of squads, which cannot deploy in the prescribed manner, and have no definite leaders.

Squad columns, in which the members of the squad follow each other in single file, with the squad leader at the head, and the second in command at the rear, are less vulnerable to artillery fire and frontal fire of small arms. They are usually more suitable also for movement in dense woods or over very broken terrain, and have the further advantage that each column is a complete unit under its proper leader. (Plate 351.)

To place his section in squad columns the section leader orders: "Squad columns, MARCH," or "Squad columns right (or left), MARCH." The squads form abreast of each other at deploying intervals (40 to 50 yards). This formation is known as "line of squad columns." The formation may be echeloned or "staggered," that is the heads of the columns may not be on the same line, and the intervals may be either extended or closed from the normal deploying interval. For example, in passing through a dense wood the intervals should not exceed the limit of visibility in the wood, so that each squad may see the one next to it. The original leading squad, which is usually the center of the line of squad columns, is the base squad or guide for the movement, unless another squad be specially designated, as "(Such) squad, base squad."

To control the movement of the line of squad columns the section leader places himself where he can see to the front, see his three squads, and be seen and heard by the squad leaders. Usually this will be in front of the center squad.

The flank squads are responsible for observation and security on their respective flanks. The front is covered by the scouts. Usually each pair of scouts moves approximately in front of its own squad, at a suitable distance, depending on the terrain, of from 25 to 500 yards.

If the scouts are already in advance they adapt themselves to the formation. Otherwise the order of the section leader, "SCOUTS OUT," will cause the scouts of each squad to precede it by about 150 yards. If a different distance be desired the section leader orders, "Move 50 (250, etc.) yards in front. SCOUTS OUT."

The section guide follows in rear of the line of squad columns, where he can best perform the duties heretofore mentioned.

Each squad leader is at the head of his squad where he can see to the front, see and hear the section leader, and see and be seen and heard by the members of his squad. The second in command (No. 4, rear rank), follows in rear where he performs duties relative to the squad similar to those of the section guide.

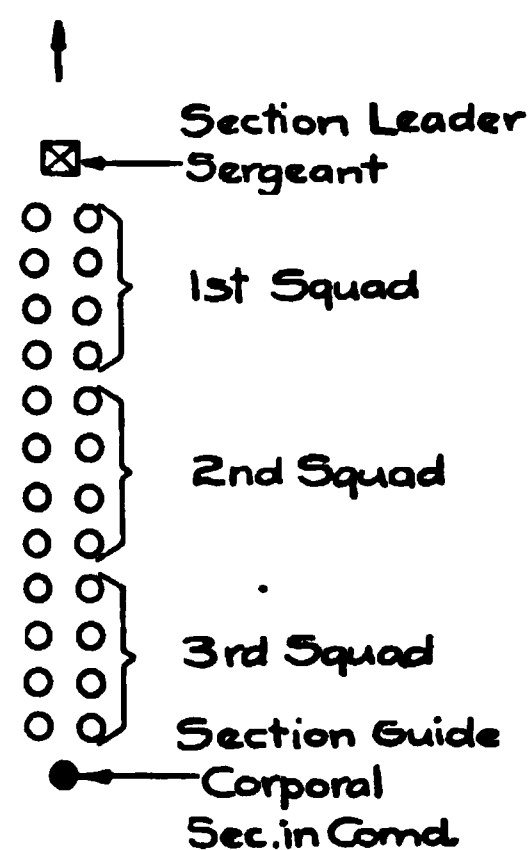


PLATE 350.—Section Column.

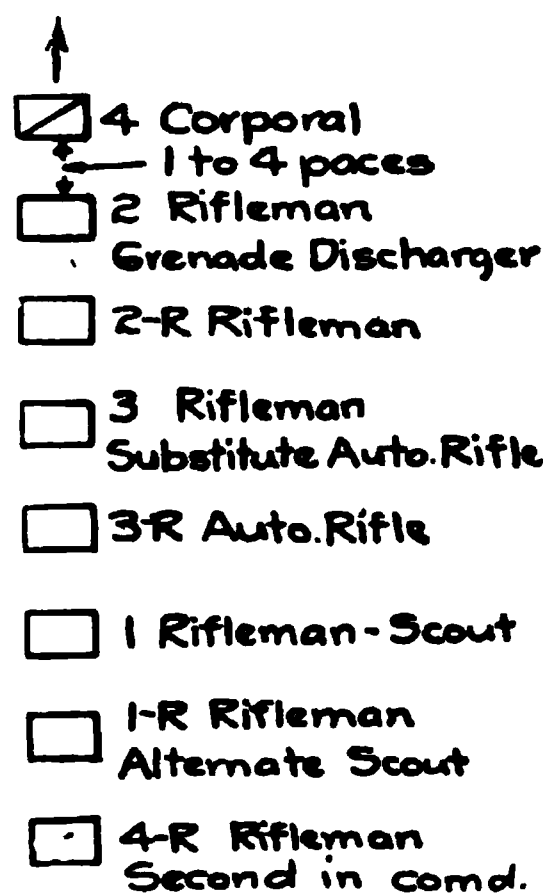


PLATE 351.—Squad Column.

Columns are not suitable for the delivery of fire, and for this purpose must be deployed in line of skirmishers. This is usually executed to the front, in the manner prescribed in the drill regulations.

In case of emergency a section column can deploy directly to a flank. An order, "Right (left), FACE," or "By the right (left) flank, MARCH," followed by a target designation, will place the section in a suitable formation and initiate fire to the flank. The men in the rear rank (when faced to the flank), step into the intervals in the front rank. This results in a skirmish line at close intervals, but the line is able to open fire, and the intervals are increased to the proper amount as opportunity allows.

A line of squad columns can similarly deploy to the flank. The flank squad can open fire at once. The other squads advance to the line by rushes or infiltration, as rapidly as possible.

b. Movement out of sight of the enemy, but not protected or covered from unaimed or area fire, would include that which takes place through thin woods, brush, tall weeds, standing crops, etc., or on reverse slopes not steep enough to afford defilade. Here the troops, would be invisible to the enemy, but the terrain over which they were passing might be swept by fire, especially area fire by machine guns. Areas subject to fire should be located by the scouts, and avoided by making a detour around them if possible. If it be impossible to effect a detour, and if the fire be sufficiently intense, it may be necessary to deploy and pass through by rushes or infiltration to a covered locality beyond. Areas may be deliberately swept by fire, usually machine gun fire, on the chance that they contain hostile troops, or in the knowledge that such troops are obliged to pass through them. Or they may be swept by the "overs" or high shots directed at another locality. For example, if troops be in line near the edge of a wood, or on or just below a crest whose reverse slope is not steep enough to afford defilade, troops such as supports moving up to this line would be exposed to the shots directed at the firing line, but which passed above it. This is called unaimed fire, and it would usually be fairly uniformly distributed along the front.

Small columns are the most suitable formation for passing through such fire. This may be forcibly illustrated as follows: On the floor of a drill hall or lecture room, place a line of beans or other small objects at close intervals. These are assumed to represent distributed fire passing over a crest or through the edge of a wood. Now form a line of men as a skirmish line, parallel to the line of beans. Cause them to pass over the line of beans, each man picking up as many as he can reach without changing his interval from the men on either side. Repeat, with a more extended interval. Next form the same men on the same front, but in line of small columns instead of as skirmishers. Pass over the line of beans, each column picking up as many as it can without moving sideways. The number of beans picked up in each of these cases will represent the *relative* number of hits that would be received by troops in the stated formations. The line deployed with the skirmishers at close intervals (able to touch hands), will pick up *all* the beans. If the interval be extended the number that can be picked up is greatly reduced. Finally the line of small columns will be able to pick up only a few of the beans.

Now place the beans in a long, narrow ellipse or oval, corresponding in shape to the beaten zone of a machine gun. March a small column through the beans in the direction of the long axis of the oval. Call attention to the fact that each man is able to pick up some beans. Now march a skirmish line past in the same direction. Call attention to the fact that only one man passes through the beaten zone represented by the beans. Hence in an advance against machine gun fire a thin skirmish line is the best formation.

The formation and control of section and squad columns has been discussed. See also I. D. R.

c. Movement in sight of the enemy will be subject to aimed fire of all weapons. It is impossible for troops to advance steadily in the open subject to the *unrestricted*

fire of rifles, automatic rifles and machine guns. However, an advance in view of the enemy is the rule in open warfare.

Often, especially in stabilized warfare, in an attack on highly organized defenses, the small arms fire of the enemy is restricted by means of a rolling barrage of artillery fire. In this case the attacking infantry advances in waves, the leading wave following as closely as possible behind the barrage.

When the barrage is lacking, as will frequently be the case in mobile warfare, there are two ways the attack may be advanced without ruinous losses.

1. The attacker's troops in moving forward should offer as small a target for as short a time as possible to the enemy's aimed fire.

2. The fire of the enemy should be restricted and made ineffective by a heavy, well directed and accurate fire of all the weapons of the attacker.

In order to offer as poor a target as possible to the enemy's aimed fire the attacker's formations must be dispersed. All dense formations, such as bunched groups, large columns, lines at close intervals, must be avoided. A unit moving forward should expose itself as little as possible to view, and an individual should expose as little as possible of his body. This is accomplished by the intelligent use of *cover*. When exposed in the open in moving from cover to cover, a unit or an individual should move rapidly, thereby offering a poorer target and reducing the time of exposure.

Fire Superiority.

It is frequently said that the best cover for the attacker's movement is his own fire. This fire includes not only that of the assault platoons themselves, but also the accompanying weapons (machine guns, one pounders and light mortars), and artillery. The effect of a properly directed fire is to cause the enemy to stay down under cover and to render his fire less effective. When the effect of the enemy's fire has been reduced so that the attacker is able to move forward without suffering ruinous losses, the attack is said to possess *fire superiority* over the defense. The extent of this superiority of fire will determine the speed with which the attacker is able to move. If the fire of the defense is very wild and ineffective, the attack will be able to move complete units forward simultaneously over relatively long distances, and it will soon close with the defender in the shock of personal contact. If the fire of the defense be somewhat more effective the attack will be able to move only small units or fractions of a unit over relatively small distances, or his troops may have to work their way forward as individuals. When the fire of the defense is so effective that no forward movement is possible without heavier losses than the attacking troops can endure, fire superiority lies with the defense, and if this continues the attack is a failure.

The terrain exercises a great influence upon the effect of fire. The defender will always try to have the combat take place in a locality affording him a good field of fire as far to his front as possible, preferably up to 1000 yards. A good field of fire is one which is open to view, favorable for fire, and which affords little or no natural shelter or concealment which the attacker can use in his advance.

The Mechanism of Movement Under Fire.

The section in attack advances under fire by rushes, either of the whole section, or of squads or parts of squads, or by individual movement which is known as *infiltration*.

Advance by rushes. When the fire of other units or of accompanying weapons or artillery is effectively applied to the enemy opposing the advance of the section, or when for any reason the fire of the enemy is weak and ineffective, the entire section may be able to advance by a rush, usually of from 25 to 75 yards. (Plate 352.)

The section leader will initiate, control and lead such a movement. Having judged that a section rush is possible, he selects the next position to be occupied, and orders, "Cease firing. Prepare to rush." He then moves to the front, through his section,

ordering, "UP," and followed by his section, moves rapidly to the new position. The section guide follows, supervising the movement and enforcing fire discipline.

If the fire of the enemy or the lack of cover is such that a rush of the entire section is not advisable, the rush may be made by smaller fractions, squads, half squads, or two men at a time, usually progressively from one flank of the section to the other.

The section leader will direct but usually will not lead such a movement. He may move to the vicinity of the flank from which the movement is to start. He indicates the flank from which the movement is to commence, the size of the fractions to execute the rush, if practicable the next position in advance to be occupied and whether the successive units are to advance without orders, or upon signal from the section leader.

The orders of the section leader might be as follows: "By squads, from the right (left), RUSH"; or, "To that hedgerow, by fours (twos) from the right (left), RUSH." The orders may be given by the signals in the drill regulations.

Each squad leader, upon receiving the order or signal will:

1. Select the position to which to move (unless this has been designated).

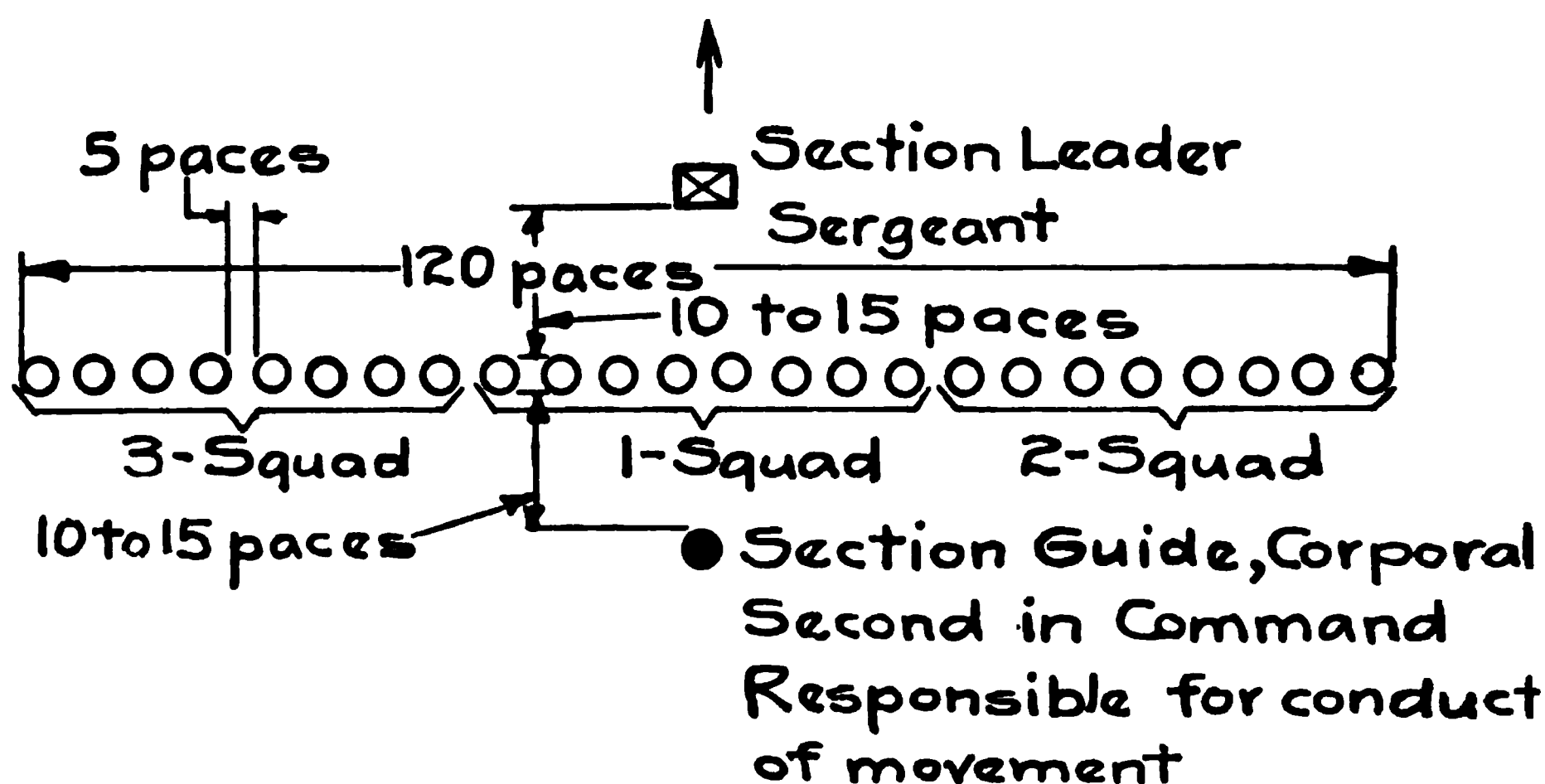


PLATE 352.—Section moving forward, Deployed as Skirmishers.

2. Prepare his squad to move.
3. Lead the rush to the new position.
4. See that the squad halts on the proper line and promptly resumes fire.

His orders might be: "Cease firing. Prepare to rush." He then passes through his squad, ordering, "UP," and leads the rush to the next position. Each man upon arriving in the position on line with the squad leader, throws himself upon the ground and promptly resumes fire.

If the rush be executed by half squads (fours) the squad leader may order: "Men on my right. CEASE FIRING. Prepare to rush. UP." He leads this fraction forward, and the second in command similarly conducts the remainder of the squad at the proper time.

If the rush be executed by twos the squad leader designates the successive fractions by name. The squad leader himself will usually advance when the bulk of his squad has moved to the new position. He may accompany one of the fractions. The second in command supervises the advance of the remainder.

The section leader in like manner usually advances to the new position when the bulk of his section has moved, leaving the section guide to supervise the remainder of the movement.

Advance by infiltration. Rifle and automatic rifle fire in the attack is not very effective at ranges exceeding 800 yards. The attacker will accordingly usually try

to advance to within 800 yards of the defender's position, before opening the struggle for fire superiority, with rifle and automatic rifle. The machine gun fire of the defense, in favorable terrain, will be effective at ranges of 1000 yards or even more. Accordingly the attack may come under such fire at ranges where it cannot effectively reply with its own rifle fire. This will be by reason of the range and also because of the difficulty of locating the hostile machine guns at such great distances. The attacker may be unable to beat down the defender's fire to such an extent as to make an advance by section rushes practicable. Also at closer ranges (within 800 yards) the nature of the terrain and the effectiveness of the defender's fire may be such that the advance by rushes cannot be carried out without heavy losses.

In such cases the method of advance by the independent movement of squads or individuals is used. This is known as infiltration.

The section leader initiates the movement, and makes provisions for regaining control of his section upon its completion.

The next position forward will often be occupied by the scouts, it being their duty to outline a position favorable for the development of fire, if practicable. The section leader may order: "On the line of scouts RE-FORM," or "On the far side of that ditch RE-FORM." The order may be given to one squad, and by them passed down the line to the others. If it be impracticable to give such an order, the section leader may simply signal: "Forward."

Upon receiving the order or signal of the section leader, each squad leader will:

1. Identify the forward position indicated by the section leader, or if no such position has been indicated, select a suitable position which can probably be reached.
2. Decide upon the best way to move; whether by a squad or half squad rush in the open, in column along a covered route, such as a ravine or ditch, if such be available, or by individual movement.
3. Issue the necessary orders for the movement.

The orders of the squad leader might be: "On the line of scouts RE-FORM," allowing each man to select his own route. Or he may designate by name the men to move, as, "Jones, move to line of scouts." If the scouts are with the squad they will ordinarily be the first to advance. The next to move should usually be the automatic rifleman, in order to establish as promptly as possible fire power to cover the remainder of the movement. The substitute automatic rifle should usually follow his principal, to insure that the fire of the automatic rifle shall be maintained. The squad leader may move forward in his judgment when part of his squad has reached the new position, in order to control its fire. He should cause the automatic rifleman to precede him, as otherwise he cannot personally insure this important element of his fire power reaching the new position. The second in command will usually be the last to move forward. He assumes the direction of the movement as soon as the squad leader has advanced.

If the available cover dictates an advance in squad columns along a sheltered route (ravine, woods, etc.), the squad leader may order; "Squad column. Follow me at 5 yards," moving out on the route selected. If the advance be made by rushes of two men, the orders might be: "Jones and Black. CEASE FIRING. To line of scouts (to far side of that ditch). Prepare to rush. UP." Similar orders are given to the remaining men, "Brown and Gray. CEASE FIRING. On line with Jones. Prepare to rush. UP."

If the distance be short the squad leader may wait until one man or one pair reach the advanced position before ordering up the next. Or he may start them sooner. This is a matter for judgment in each case. The skilful leader will work his men forward in the least time and with the least exposure.

The Assault.

The purpose of fire and movement in the attack is to reach a position from which an assault may be delivered upon the enemy's position. The assault is the culmination of each stage of the attack.

The assault will usually be more effective when it can be delivered by a section rush. However, there will be cases where the assault is delivered by squad or even by a few individuals. The assault should be delivered at the earliest moment at which it gives reasonable promise of success. Each assault should have a leader, and the small units in the assault will be led in person by their proper leaders. Bayonets are fixed when it becomes apparent that the moment for the assault is approaching, unless they have previously been fixed.

Just before the assault the leader orders or signals: "Fire faster," which conveys to a trained unit the information that the moment for the assault is at hand. The leader, calling the attention of his men by whistle if necessary, then moves forward through the line, signaling or ordering, "Follow me," and personally leads the charge into the hostile position.

Use of signals. The movement of the fire units in combat should be started, directed and halted by the signals and orders in the drill regulations. They have been proven by experience to be the simplest and best. They are sufficient to meet the need. They will be understood by trained troops. They inspire confidence of the men in their leader.

Summary. We have seen that the fire attack of the infantry is a combination and co-ordination of *fire* and *movement*. These are dependent each on the other. Fire superiority, which reduces the effectiveness of the enemy's fire, is necessary to continued movement. Movement is necessary to gain a position from which effective fire may be delivered. And finally both are necessary to the steady advance of the infantry which culminates in an assault upon the enemy. Fire superiority is established by all the weapons at the disposal of the attacker, including those of the infantry platoon, the accompanying weapons and the artillery. Movement is made under cover of this fire, and the leader of the small fire unit should take advantage of every favorable fire situation to move forward. If the enemy's fire slackens this is the signal for the attacker to push on. For example, if the leader of a small unit sees two light mortar bombs fall, one short of and one beyond the enemy who is opposing his advance, he should know that subsequent bombs will probably fall upon the target. He must prepare to take advantage of this assistance to make a determined rush forward at exactly the right instant.

Illustrative Example of Fire and Movement in the Attack.

To make more clear the meanings of the terms "fire superiority," and "fire and movement" in the fire attack, let us take a simple example. Suppose that a certain individual A is attacking another individual X. A is in the open and can be plainly seen except when he is able to find some natural cover. X, the defender, is in a trench behind the parapet. In firing his rifle he exposes only his head, and even this will be difficult to see if the trench is properly constructed and has a parapet behind it, so that X's head, as seen by A does not appear distinctly on the skyline. It is evident that X, if he is as good a soldier as A, will be able to fire much more effectively. A is in the open, he is moving, he is probably more or less excited. X is well protected, he knows that he is well protected, and he fires calmly, taking careful aim. The chances are that X will hit A before A hits him. This means that where numbers and quality of troops are equal, the defender properly intrenched, will deliver a more effective fire than the attacker, and that to drive home an attack, superior numbers or better troops, or both are required.

Now let us suppose that A is reinforced by another man B. A and B firing together produce a greater volume of fire than X, especially if they are separated by an interval so that they fire at X from his left and right front, and so that he cannot attend to both of them at the same time. Probably they will not actually hit X. But their bullets will strike unpleasantly close all round him. This will "get on his nerves," he will feel that he is in danger, he will be inclined to stay down in his trench. When he does fire he will not take aim as accurately as when opposed to A alone. When X has been reduced to this condition A and B have fire superiority

over him. But this alone is of no use. They must go up to X's trench, driving him out of it, or if possible, killing or capturing him.

A and B having fire superiority, having rendered X's fire wild and ineffective, are now able to advance, as they must do if they are to win victory over X. But if they both advance at the same time over any considerable distance they must of course slacken their fire, because they cannot fire as many shots or as accurately while moving as while lying still. X will presently observe that bullets are not striking as close to him as they were. He will recover from his attack of "nerves"; he will decide that A and B are not such good shots after all. He will again take more careful aim, his shots will strike closer to A and B. He may even hit one of them, or at any rate he will convince them that they will be hit if they continue to advance without firing. The fire superiority has now passed from A and B to X. A and B have lost it by failing to keep up their fire.

Now let us suppose that A and B reestablish fire superiority, by lying down behind some natural cover, where X cannot see them very well, and again firing a great number of well-aimed shots at X. They now adopt different tactics for their advance. Instead of moving forward a great distance at a time, they move only a short distance and again lie down and fire at X. The intervals during which they are not firing are so short that X will not have time to recover from one volley before he receives the next. Also A and B discover that having by a great volume of fire forced X to get down in his trench, a much less volume of fire, an occasional bullet striking near X, is sufficient to *keep* him down. And so A fires alone, while B takes advantage of the ineffectiveness of X's fire to run forward to some sheltered place nearer to X. Here B lies down and again fires at X, A also continuing to fire if necessary. Presently A ceases firing and advances to a position abreast of B or beyond him. Thus A and B continue the advance by alternately firing and moving forward, always utilizing natural cover as far as possible. A and B also discover that they make better progress if they do not stay too close together. So while A engages X's attention from the front, B works his way around one side of X and fires at him from an oblique direction. X finds it much more difficult to evade shots coming from different directions, especially when some of them come from a position on his flank. If he devotes his attention to either of the attackers the other will fire more shots, better aimed, and will also move closer.

Finally A and B approach so close that they can reach X's position in a single short rush. The fact that they have been able to thus approach him unharmed by his fire, will often convince X that his situation is desperate. Perhaps he will decide to surrender or to leave his trench and make a run to the rear, in other words to retreat. Perhaps some comrades in rear will aid him in this by firing at A and B while X retreats. Or X may decide or may have his orders, to resist to the end. In this case A and B, having worked up close to X, will make a sudden rush at him with their bayonets, usually from different directions. Perhaps X will kill one of them, but he will hardly have time to kill both, and they will either kill or capture him in his trench thus deciding the fight in favor of A and B.

If in addition to the rifle fire of A and B there is also a field gun or small howitzer throwing shells at X's trench, or a machine gun in a sheltered position shooting at him, this will greatly aid A and B in gaining and maintaining fire superiority over X. They will be less apt to be hit by X, they will not have to fire as often themselves, and will hence be able to advance more rapidly.

Finally, just as A and B enter X's trench, and are proceeding to disarm him, having perhaps temporarily laid down their rifles, two comrades of X make a sudden rush at them from a nearby trench which they had not noticed. At the same time another man opens fire on them from a trench on their other side. A and B, if taken by surprise, may be forced to run, or else they may be killed or captured, and their carefully executed attack will have come to naught. So while A disarms X, B conceals himself and keeps a sharp lookout in the direction from which a counter attack may be expected, and as X's comrades approach he opens fire on them from the trench, having dug for himself a little place in the *parados* back of X's trench so

that he can use his rifle effectively. Even if A and B are not at once attacked, while they are still excited and perhaps breathless from their own attack, they know that they are very apt to be attacked later, and so they prepare X's trench to resist such an attack. Also some of their own comrades will join them to assist in holding the position.

Such is the conduct and the psychology of the infantry attack and defense in mobile warfare. If we now consider X to be a combat group composed of two squads to a platoon, and A and B to be two attacking platoons, we have a good picture of the little combats which make up a great battle.

In this Example the Following Points are to be Noted:

a. A successful fire attack usually implies a superiority of numbers or quality of troops, or both. This superiority need be local only, or at the actual point of attack.

b. Fire superiority must be established before an advance is possible over open ground against an intrenched enemy. And once established it must be maintained.

c. Fire superiority is largely moral. It is not necessary to actually kill or wound an enemy in order to establish fire superiority, although of course it aids greatly if this can be done. In the example given, however, the entire action might be fought out while A, B and X remained unwounded.

d. A successful attack involves fire and movement. Fire alone will not achieve victory. The attacking infantry must advance against the enemy. Fire superiority over the defender enables the attacker to advance and close with the defender without suffering ruinous losses.

e. The auxiliary arms, artillery, light howitzers, machine guns, etc., are an aid to the infantry of both attack and defense in gaining and maintaining fire superiority.

f. Decisive results are achieved only by an attack which advances into the defender's position. Decisive results for the defender are achieved by counter attack.

g. The attack will be more effective if the attackers are somewhat separated, especially if some of them are able to work around to the flank of the defender. They thus subject him to oblique, converging and cross-fire, which is much more effective than an equal volume of frontal fire alone. If the attackers advance in dense masses moving straight to the front they will form excellent targets for the defender's fire, and will suffer accordingly.

h. The attackers should, in the first instance, approach as close as possible to the defender before opening fire, and while still concealed from his view by natural cover. Their fire will be more effective if opened at short range, and the time during which they will be exposed to the defender's fire will be reduced.

i. During his advance the attacker should utilize to the fullest extent all natural cover or concealment which the terrain affords, both while he is in motion and during his halts.

j. Victory may be lost to the attacker if he does not promptly prepare to meet the defender's counter attack, once he has penetrated the latter's position. As a rule the best protection against counter attack is a continuation of the advance.

CONDUCT OF FIRE.

Conduct of fire includes the duties of leaders of fire units in:

- a. Maintaining fire control.
- b. Enforcing fire discipline.

These duties must be performed both in attack and defense, varying somewhat in their nature and purpose in the two cases.

As a preliminary to our discussion, therefore, we will consider the principles governing the conduct of the platoon and its component units in attack and defense.

Conduct of the Platoon in Attack. General Considerations.

The possible plans of action for an infantry platoon with a definite attack mission, are few in number. They depend on a few basic principles.

1. To attack means to move forward.
2. The immediate object of movement is to gain a position which permits the development of more effective fire. The ultimate object of movement is to gain a position from which an assault may be launched against the enemy.
3. Unless his movements are masked by cover, darkness, fog, etc., the attacker must gain fire superiority before he is able to advance without ruinous losses. Fire superiority having been established, must be maintained throughout the forward movement.

A consideration of these principles will show that the plan of the platoon attack must provide for:

1. The use of available cover, combined with rapid and skilful movement, in gaining an initial position in which fire superiority may be established.
2. Progressive movement forward from one fire position to another which either permits more effective fire or is an intermediate step in the advance to the assault. For example: It is not always possible to move directly from one good fire position to a better. The attacker may be compelled to leave an excellent fire position which is well covered, to advance to a more exposed and less favorable position to the front. Because the sole purpose of fire superiority is to make forward movement possible. The attacker, having established fire superiority in any position, must take advantage of the opportunity thus afforded to continue his advance, even though this may temporarily place him in a less favorable position. Victory cannot be won by fire alone. Also the attacker seeks to gain a position from which he may launch his assault. Any intermediate position, however favorable for the delivery of fire, is merely a step in the progress toward the assault position.
3. Covering each movement by sufficient fire to maintain fire superiority. Except at very close range the weapons of the platoon cannot be effectively employed in motion. Therefore it is necessary that portions of the platoon remain in the fire position to cover the forward movement of other portions. The extent of the fire superiority over the enemy will determine how large a proportion of the platoon may cease firing and advance. It may be a section, a squad, or even individuals, one by one. The movement may be a single rush from one position to the next, or a more deliberate individual movement, taking advantage of existing cover (infiltration).
4. As the most advantageous positions from which to deliver fire or launch an assault will usually be on a flank of the enemy's position, the plan should provide for placing elements of the platoon in such positions when practicable. Movements to such positions must take advantage of any cover afforded by the terrain, and of fire superiority established by other elements.

This typical procedure may of course be varied to some extent to meet emergencies which may arise.

The practicable plans for a platoon attack may usually be classed as three:

1. A continuous frontal advance without halting for the purpose of delivering fire. Such a movement is possible when covered by a rolling barrage of artillery fire, or when the natural cover is exceptionally good or the enemy's fire particularly weak and ineffective.
2. To immobilize the enemy, or pin him to his position, by a frontal attack, while employing the rear wave in maneuvers on one or (exceptionally) both flanks, to gain positions favorable for oblique or flanking fire or for assault. This will be the characteristic procedure in mobile warfare.
3. (When plan 2 is impracticable by reason of the terrain or the nature of the enemy's dispositions.) A frontal advance by alternate fire and movement rushes of fractions of the line or infiltration of individuals, building up successive firing lines closer and closer to the enemy.

All of these three typical plans will ordinarily conclude with an assault or charge upon the enemy.

The infantry platoon is the smallest unit which is deployed in depth and which has independent power of maneuver. It is the largest unit admitting of direct personal leadership and fire control in combat. It comprises two sections, each under a leader who exercises direct control over his unit in all phases of battle. The infantry platoon is commanded by a lieutenant, with a sergeant as second in command.

For a fire unit to deploy in depth is exceptional. The fire of an infantry unit is best delivered from a line. Our regulations prescribe that the normal formation shall be a single line deployed at not less than five pace intervals. The deployment of the infantry platoon is not only for the purpose of fire but also for maneuver.

Duties of the Platoon Leader and Platoon Sergeant in Attack.

The primary duties of the platoon leader are those which concern maneuver.

As in larger units the second in command should not be assigned to command of one of the component units of the platoon. He is the assistant to and the replacement for the platoon leader.

The platoon sergeant's duties are therefor concerned primarily with maneuver.

Before entering action leaders of small units should be as far to the front as practicable in order that they may personally see the situation, order the deployment, and begin the action strictly in accordance with their own wishes.

The platoon leader has another very important reason for being forward. He must maintain direction. He can best do this when forward and in direct communication with his leading elements.

The distance between the assault and support waves of the platoon in movement is ordinarily such as to prevent one man personally leading both.

The assault wave, if preceded by scouts, is ordinarily such a distance from the scouts that a leader who is as far forward as practicable, *i. e.*, in rear of the line of scouts would not be able to personally lead the assault wave.

If then we extend the meaning of the term "Conduct of Fire" to include not only those duties which are incident to the actual fire fight, but also those which are necessary to insure the orderly and systematic entrance into the fire fight, we can see that in either case the position of the leader of the infantry platoon prevents that direct control of the platoon necessary to control fire or enforce fire discipline.

The platoon has no reserve, but when deployed in depth has the second section as a support.

During the action the distance between the assault wave and support wave is ordinarily the distance between the firing position and the next available cover in rear. The platoon leader in order to be near enough to the support wave to insure direct and easy communication will be far enough from the first wave to prevent direct personal control.

He must in each case leave to the local leaders the detailed conduct of the assaulting troops. These local leaders are the section and squad leaders.

This conduct of assaulting troops is concerned mainly with the fire of these troops and movement which should have for its object the gaining of such a position that fire can be developed, which, by its direction, volume, or accuracy is superior to that of the enemy. In other words the duties of the local leaders are mainly *control of fire and enforcement of fire discipline.*

Summary. It will thus be apparent that the primary duties of the platoon leader are *not* those which are incident to the personal conduct of fire. He directs and supervises the fire and movement of his platoon but he does so through his subordinate local leaders (section and squad).

The duties of the platoon leader in attack are covered in detail under offensive combat, in the course in Tactics. In this course we are especially concerned with the duties of the local leaders of the fire units.

THE SECTION.

Organization and leaders. The infantry rifle section is the fire unit. Its fire can, as a rule, best be applied to a single target.

Under present organization the section consists of three squads. Its deployment for fire action in the attack is in a single line of skirmishers at 5 yards intervals, that is one man to each 5 yards of front. This interval may be increased, but should not be diminished. The usual frontage of the section in this formation is accordingly about 120 yards.

The section is commanded by a section leader, a sergeant, having as his assistant and second in command, a corporal—the section guide. These non-commissioned officers are armed with the rifle and equipped with tracer ammunition for target designation. The section leader exercises direct control over his section during all stages of the action, remaining always within sight of it.

Duties of the Section Leader.

The duties of the section leader in the fire action are included under two heads:

a. Duties connected with fire control:

1. Apply fire to the proper target.
 2. Observe the target for fire effect and the section to note the fire effect of the enemy.
 3. Adjust errors in fire, or make necessary changes of adjustment.
 4. Initiate and control movement.
 5. Combine and co-ordinate fire and movement.
 6. Initiate the assault.
 7. Deliver covering fire in support of the movement of the other section.
 8. Support adjacent units with cross and flanking fire.
- b. Duties connected with fire discipline.*
9. Provide for the transmission of orders and signals, and enforce compliance.
 10. Regulate the rate of fire.
 11. Insure the necessary supply of ammunition.
 12. Check breaches of fire discipline.
 13. Insure the prompt replacement of casualties, necessary to maintain the integrity of his fire unit, and the evacuation of wounded.
 14. Lead the section in rushes as a whole, and in the assault.
 15. Reorganize his unit after the assault.
 16. Set an example to his men by his conduct, bearing and aggressiveness.

The important function of personally leading his section in the charge or assault on the enemy's position, is included as a duty under *fire discipline*, inasmuch as it is a matter of routine and moral effect.

All of these duties are essential to both attack and defense, though their relative frequency and the order in which they usually occur will vary in the two situations.

Fire Orders and Signals.

Considering now these primary duties of the section leader in the attack, it will be apparent that he can apply or adjust fire, and initiate or control movement, only by means of orders or signals. As the orders of a section leader in the fire fight are concerned with the control of fire, or with movement for the purpose of better applying fire, they are properly termed *fire orders*.

Estimate of the situation. Fire orders, like all other orders, must be preceded by an *estimate of the situation*.

An estimate of the situation is a logical process of thought, in which the leader decides as to his *mission*, or what he is required to accomplish, the conditions which will help him in accomplishing his mission, and those which may hinder its accomplishment. From these considerations he will usually see that there are one or more *courses of action* open to him to accomplish his mission, each course possessing certain advantages and often certain disadvantages. From these courses the leader

selects the one which is most promising of success, according to his judgment, and decides the steps that he will take in pursuing this course. These steps constitute the leader's *plan of action*. Having decided upon his plan of action the leader must issue to his subordinates the *orders* necessary to carry out this plan.

An estimate of the situation should not and cannot be made according to any fixed schedule or form. Nevertheless it should be an orderly and logical process of thought, and experience proves that it should follow a certain sequence and include certain important items. These items are:

1. *The mission*. A clear statement of the task to be done.
2. *The enemy*. A consideration of everything known or reasonably inferred with reference to the enemy which would probably affect the leader's action.
3. *His own troops*. Similar considerations with reference to the friendly troops, including the leader's own immediate command, and any supporting troops which might aid him in carrying out his task.
4. *The terrain*. The terrain will always exercise a most important influence on any plan of action. The leader must avail himself of its advantages, and avoid its disadvantages as far as is possible.
5. *Other conditions*. There will be in many cases certain special conditions which will influence the decision as to a plan of action, for example weather and season. These should be given such consideration as their importance warrants.

1. *The mission*. For a small command the mission will ordinarily be clear, definite and simple. As a rule it will be embodied in the orders received from higher command. For example: "Cover the near edge of that small wood with fire." "Move down that draw to a fire position on the left flank of the enemy in the farm."

We might draw a comparison between the general or "maneuver" and immediate or "fire" mission of the section, and the mission of a football team in a game and in a particular play. The mission of the team in the game is to win. Its mission in a particular play is to advance the ball a certain distance, and as much farther as possible. The general mission of the section is to contribute to the victory of the force as a whole. Such a mission is defined in an order: "Advance on a front of 150 yards, direction S. 18° W." It is the continued advance of the infantry which means victory. The special or fire mission would be defined in an order: "Range, 800. Dead tree to left front. Enemy line extending three fingers right. FIRE AT WILL."

The maneuver mission is the guide on which the maneuver order is based. The fire mission is the central idea, on which the fire order is based.

A clear understanding of his mission will guide the leader in the confusing emergencies of combat.

2. *The enemy*. The enemy with which the section is especially concerned is that within the platoon zone of action, and is to be regarded as a target. The range, location and extent of the target are the important elements to be considered. The nature and volume of the fire that is being or may be delivered by the target and by other elements of the enemy are to be considered. The leader should be familiar with the organization and tactical methods of the enemy, from which his probable actions may be divined. The general situation should be known, for example, whether or not the enemy is in a general retreat, and the physical condition and morale of his troops, as this will have a bearing on the nature of the resistance that may be expected, and the chances that may be taken in pushing ahead. It is important to know the extent to which the hostile position has been organized for defense.

3. *His own troops*. The leader's information concerning his own troops, including his section and the elements which protect and support it, will usually be quite complete and definite. The conduct of other elements will influence his own conduct.

For example: If the scouts of the section on the left have cleared a wood on the flank, it will usually be safe to advance past such a wood. If the unit on the right, or the supporting weapons are applying fire to the target of the section, it

may be possible to effect an advance, when without such fire support this would be impossible. If it be known that the other section of the platoon is working forward to gain the enemy's flank, the section leader may determine to remain in his position, and assist this advance by maintaining fire superiority over the enemy, and fully occupying his attention. When the other section opens a vigorous fire on the flank of the enemy, he will take advantage of such a diversion to move forward.

4. *The terrain.* The selection of a fire position, the route of advance, the formation and manner of moving forward, are all greatly dependent on the nature of the terrain, and the cover and concealment that it affords. Continued study of the ground will continually reveal new features which will affect the leader's plans. "The little drainage ditch which you did not note until the third time you looked, might save the lives of your men in advancing. It might determine for you that the proper way to advance was one man at a time crawling up this ditch, rather than by squad rushes in the open, exposed to fire."

Personal reconnaissance the basis for estimates. The basis for much of this estimate in the case of the leader of a small unit, must be personal reconnaissance. His decisions will be the better if made "in sight of the facts." He utilizes his map, field glass and compass.

The mission will usually be so definite, and the limits of time and space so restricted, that but few courses of action will be open to the section leader. His decision as to the course to be adopted must be quick and definite.

Form and contents of orders. Now, and not until now is the section leader ready to issue his orders. The fire orders of a section are short and simple. So far as possible they take the forms prescribed in the drill regulations. They may be verbally given, or conveyed by means of signals. They may consist of a single word, as "Halt," or a single gesture, "Commence firing."

In our service the complete order follows a standard form. It consist of 5 parts, as follows:

1. Information concerning the enemy and supporting troops.
2. The general plan of action of the unit.
3. A definite task for each element of the command.
4. Any necessary administrative details.
5. The location of the commander, or where messages for him will be sent.

Information to be given subordinates. Such an order is necessary to secure proper team work. The men of the section, especially the squad leaders, should know what there is to be known concerning the enemy they are to attack. They must have such information if they are to exercise initiative in carrying out their own tasks. They should know what other units adjacent to them are doing. If the second section is working forward up a draw to the enemy's flank the first section should know about it. If the section on the right has captured the machine gun that was holding up their advance they should know this. Each element, and each man of the element should know the particular task he is required to perform. This may be simply to traverse his fire across the front of a designated target. Administrative details usually will not concern the platoon in attack, but sometimes information concerning ammunition, food and water may be necessary. The elements of the command must know where their leader will be, or how they may communicate with him. In a small unit he can usually be seen by his subordinate leaders. But if not he must tell them where he will be, or where they are to send messages, or both.

Fire estimates and orders continuous. The estimates, plans and orders of the small unit in combat will always be fragmentary. It is quite impossible to plan and issue orders for an entire fire fight in advance. The leader estimates the opening situation, and issues the orders necessary to commit his command to action. He cannot foresee what the future developments will be. Emergencies will constantly arise. The general nature of the emergencies of combat the leader will know. He will think of them and plan for them, but he cannot issue orders to

meet them until they are actually at hand. The "estimate of the situation" will be a continuous process. The leader closely watches every development, and modifies or extends his plans accordingly, issuing his orders from time to time, as may be necessary. The emergencies of combat arise so suddenly that the leader cannot meet them promptly unless he has thought about and provided for them to a great extent in advance of their occurrence.

Summary. The mechanism of the application of fire, and the methods of observation and adjustment have been covered in the control of fire.

The initiation and control of movement, and the principles which must guide the leader of a fire unit in the proper co-ordination of fire and movement in advancing the attack, have been covered in the chapter on the control of movement.

The action to be taken in any situation, whether for the control of fire, or control of movement, teamwork in the support of other units, etc., will be decided by the leader in his estimate of each aspect of the ever-changing situation during the fire fight. The principles which should guide him and the manner in which he makes this estimate and formulates the orders necessary to carry out his plans, are discussed herein. The actions and orders appropriate to each situation are explained and illustrated in the proper places.

The delivery by one section of the platoon of covering fire for the movement of the other involves no new principles. It involves only continual observation by the section leader of the situation of the other section, to the end that he may intelligently co-operate in the teamwork of the platoon.

The support of adjacent units by cross and flanking fire is a special case of the application of fire. It requires that the fire leader observe not only the conduct and situation of his own unit, but that of adjacent units on his flanks, with a view to applying his fire to the proper targets at the proper time to assist their advance.

Duties of the Section Leader.

We will now take up the duties of the section leader in attack, which have to do with *fire discipline* within the section.

Fire Discipline. It is difficult to clearly distinguish the duties pertaining to *fire discipline* from those which pertain to *fire control*.

Any action which is necessary to meet a particular situation, and which accordingly demands an estimate of that situation, and plans and orders adapted to the particular conditions to be met, is classed as *fire control*. Any action which pertains to the routine conduct of fire in accordance with approved methods based on experience, and which accordingly should generally be carried out in any situation, is classed as *fire discipline*. The two functions tend to merge into each other, and it is impossible to draw any sharp line between them.

The section leader, as commander of the larger fire unit, is concerned with the control of fire, which constitutes his chief duty. He is, nevertheless, responsible for the maintenance of fire discipline within his section, which constitutes his secondary duty. In the performance of this secondary duty the section leader must:

1. Provide for the prompt transmission of his orders and signals to his subordinate (squad) leaders, and the enforcement of compliance therewith.
2. Regulate the rate of fire.
3. Insure the necessary supply of ammunition.
4. Check breaches of fire discipline.
5. Insure the prompt replacement of casualties, and the evacuation of wounded.
6. Lead the section in rushes as a whole, and in the assault.
7. Reorganize his unit after the assault.
8. Set an example to his men by his conduct, bearing and aggressiveness.

Position of the section leader in combat. Transmission of orders. It is of importance that the squad leaders should be able to promptly receive the orders of the section leader, and that the latter should personally see that these orders are

being carried out. The location of section headquarters has much to do with this, and the section leader should take a position where he can see and be seen by his squad leaders, and if possible also heard by them. Generally this position will be somewhat in rear of and opposite the center of the section, but it is determined not by any fixed rule, but by the necessity of properly performing his duties. These will include also the observation of the enemy and the effect of fire on both sides, and visual contact with platoon headquarters. It will not always be possible to meet all of these requirements from a single position. The section leader moves about as necessary in the performance of his duties. He also utilizes his section guide as an agent of communication both with the squad leaders and with platoon headquarters. The section guide is specially charged with watching for and transmitting any orders from the platoon leader. He calls the attention of the squad leaders to any breaches of fire discipline within their squads, or any failure to carry out the orders of the section leader, and if necessary goes in person to the squad leader for this purpose.

Rate of fire. The section leader must see that the proper rate of fire is maintained. The correct rate to insure maximum results (rounds per minute) is thirteen minus the range in hundreds of yards. The squad leaders and men should know this rule, but if they fail to observe it the section leader takes the necessary steps to enforce discipline, usually by a signal or order, "Fire faster (slower)." If necessary the section guide goes to the squad leader and corrects the rate.

Ammunition supply. The section leader should at all times know the state of ammunition supply in his section, and should send back requests (to platoon headquarters) for additional ammunition before the need becomes critical. He checks every tendency to waste ammunition. The chief waste results from an excessive rate of fire and from failing to cease fire on order.

Ammunition is usually brought forward by carrying parties from the rear. They do not return, but are used as reinforcements for the firing line. The section leader directs the distribution of ammunition thus furnished, and assigns the replacements to squads in which casualties have occurred. Ammunition should not be collected in one spot, but should be promptly distributed along the line. It will usually be impossible for men to move along the line for this purpose, during the fire fight. The ammunition is passed along from one man to the next. The section leader will see that his squad leaders attend to the removal of ammunition from the dead or wounded, and its distribution in the squad.

Checking breaches of fire discipline. The section leader, assisted by the section guide, maintains a close watch for and takes prompt measures to check any breach of fire discipline within the squads. These will include, in addition to improper rate of fire, inattention, incorrect or dilatory execution of orders, unnecessary talking, improper use of cover either in fire positions or while moving, slow or careless movement, unnecessary exposure of person, improper firing positions, improper operation of rifles, incorrect intervals or crowding, failure to set sights or improper sight setting, etc. The correction of these matters is the duty of squad leaders, but the section leader is responsible that they do so. The section guide on his own initiative takes prompt measures to check all such breaches of discipline.

Replacement of casualties. The maintenance of the integrity of his command and the continuity of its fire by prompt replacement of casualties is a routine duty of the section leader. The minimum personnel with which any one of his three squads can function as a fire unit is a leader, automatic rifleman and scout. Each squad must have a leader, and its automatic rifle must be kept in action. A substitute is provided for each of these. The automatic rifle equipment must be at once transferred to the substitute before any movement of either the casualty or the substitute is made. If the substitutes become casualties other men qualified to fill their positions must be specially designated.

Replacements coming forward with ammunition are distributed by the section leader in accordance with their qualifications, to fill casualties in the squads. Each takes with him for distribution, the extra ammunition he has brought forward.

When a squad, as a result of casualties, is reduced below the strength that allows it to function as a unit, it may be built up by replacements from the rear. If not the squad should be broken up, and its remaining members assigned to fill vacancies, in other squads, usually during a lull in the action.

Evacuation of the wounded. The evacuation of the wounded is a part of fire discipline. In addition to the fact that the wounded should receive prompt aid, their presence with the command has a bad moral effect, especially if there is any indication that they are being neglected. The care and evacuation of the wounded is the function of the medical personnel. But they will ordinarily not be able to attend to them on the firing line unless conditions as to cover are exceptionally favorable. The wounded are usually allowed to remain near where they fall until the advance of the attack enables the medical personnel to come up to them. Wounded who are able to walk should be inspected by the section leader, or by the section guide, and directed to the battalion aid station, or a company collecting post, in rear. The location of the aid station is made known in orders to all units of the battalion. Wounded who are unable to walk are allowed to remain near where they fall until picked up by the litter bearers attached to the battalion. If in a very exposed position they may be removed to a sheltered locality near by. If the section is not moving forward first aid will be given to the seriously wounded. No member of the section is allowed to go to the rear or remain behind when his squad moves forward, for the purpose of attending to wounded. The section leader informs his platoon leader of the casualties, and of the localities where the wounded are lying, in order that the medical personnel may be directed to them.

Leading the section. When the section moves as a unit, either in a rush to a fire position, or in an assault, the section leader should lead it in person. He should be in a position where he can be seen by as many of his men as possible, especially his squad leaders, who will guide on him and watch for his signals.

Qualifications of a section leader. The section leader must be at all times an example to his men. Because of his close contact with them the influence of his personality is very great. Aggressiveness, the determination to advance the attack in spite of all difficulties, should be his chief characteristic. Good common sense, a thorough knowledge of his duties which will be apparent to all his men, the habit of unremitting attention to duty, and dignity of demeanor, are qualities he must possess. These, with a good physique and perfect health, complete the essential requirements of the successful section leader.

Duties of the Section Guide.

The section guide fulfills the functions of assistant to the section leader, and is his replacement in case he becomes a casualty. These require that he be a man of the same caliber as the section leader. Since he is second in command of the section and replacement for the section leader, he should never be assigned to the command of a squad. If the section guide becomes a casualty, the section leader promptly replaces him by one of the squad leaders, who must also be a man qualified to lead the section in case of necessity.

The section guide assists the section leader in his duties of fire control and maintenance of fire discipline, and acts as his agent of communication.

His chief duties include:

1. Maintenance of fire discipline and checking all breaches of same.
2. Watching for signals from the platoon leader.
3. Maintaining communication between the section and squad leaders. When necessary he transmits the orders or signals of the section leader, and may go in person to the squad leaders for this purpose.
4. Supervision of distribution of replacements and ammunition.
5. Inspecting walking wounded cases and directing them to the rear. Seeing that litter cases are placed in sheltered positions and given first aid when practicable. Notifying platoon headquarters of casualties in the section.
6. Preventing straggling or skulking.

7. In movement, following the section and seeing that all elements go forward as ordered by the section leader.

8. Watching the flanks of the section.

The section guide takes a position in which he can best perform these duties. Usually this will be in rear of the section, near its center, and near the section leader. He should be able to see the section leader, the three squad leaders and platoon headquarters. He seeks a position from which this is possible.

If the section leader becomes a casualty or is used as replacement to the platoon leader, the section guide promptly assumes command of the section, and replaces himself by one of the squad leaders.

THE SQUAD.

Organization and equipment. The squad is the smallest unit of infantry organization. It consists of eight men, one of whom is squad leader (a corporal). It is a fire unit. The organization of the squad, and the equipment, positions and duties of its members are of fundamental importance, since they are the basis on which infantry tactics are built.

The squad includes 1 corporal (rifeman and leader), 1 automatic rifleman, and 6 riflemen. One rifleman is also replacement for the automatic rifleman, and another is equipped with grenade discharger and rifle grenades. The positions of these men in the squad, and their equipment, are as follows:

Position.	Function.	Equipment.
No. 1, front rank ...	Scout	Rifle, bayonet, tracer ammunition.
No. 1, rear rank	Assistant scout	Rifle, bayonet, tracer ammunition.
No. 2, front rank ...	Rifleman and rifle grenadier...	Rifle, bayonet, grenade discharger, rifle grenades.
No. 2, rear rank	Rifleman	Rifle, bayonet.
No. 3, front rank ...	Rifleman and substitute auto-matic rifleman.	Rifle, bayonet.
No. 3, rear rank	Automatic rifleman	Automatic rifle, magazine filler, spare parts case, 10 magazines.
No. 4, front rank ...	Rifleman, squad leader, corporal.	Rifle, bayonet, jointed cleaning rod, magazine filler, tracer ammunition.
No. 4, rear rank	Rifleman, 2nd in command.....	Rifle, bayonet.

All riflemen carry extra ammunition for the automatic rifle, and when necessary rifle and hand grenades. Each carries one web pocket containing 2 automatic rifle magazines, except No. 2, front rank, who carries rifle grenades.

Position of the squad leader in combat. The usual position of the squad leader is in front of the center when the squad is moving as a unit, and in rear of the center when it is halted. The usual formation of the squad in combat is shown in Plate 347. The interval between men when deployed in line is usually about 5 yards. The intervals may be increased to 10 yards to cover a greater front. An interval of more than 10 yards between men disperses the squad to such an extent that control by the leader becomes difficult. It is therefore seldom exceeded, it being better to leave an interval between squads rather than to unduly increase the interval between men of the squad in cases where the section is covering a wide front. The expression "an interval of 5 yards" means that there is one man to each 5 yards of front. An interval is always left for the squad leader, which he can enter in case he takes part in the firing, which ordinarily he does not. The usual front of a squad deployed, including small intervals on its flanks, is taken to be 40 yards.

In this deployed formation the squad leader is in or immediately in front or rear of the center of his squad, where he can best see and control all his men. No. 2 of the front rank, the rifle grenadier, is on the right of the squad leader, and No. 3 of the rear rank the automatic rifleman, is on his left. The dispositions are accordingly such that the leader is next to and can most easily control the chief elements of the fire power of his squad. The scouts are on the right, when present. If they leave or rejoin the squad they do not change the intervals between the other men. No. 4 of the rear rank, who is second in command, is on the extreme left. He

assists the leader by controlling the men on that flank, especially when the leader goes forward with the right half of the squad. The substitute automatic rifleman is next to his principal where he can readily assist or replace him.

Maintaining the integrity of the squad. Replacement of casualties. The squad is not simply a group of 8 men. It is an organized fire unit, a team. Each member is equipped and trained to play his part as a member of this fire team. To realize its maximum efficiency the squad must function as a team, in attack and in defense. The squad has no subdivisions, and its members should never be separated. The scouts usually precede the advance of the rest of the squad, but are not separated from it. When the squad moves forward by twos or fours, or as individuals in the advance by infiltration, it should be reassembled in the advanced fire position. If the squad becomes scattered during combat, for example in the assault on the enemy's position, it should be reassembled and reorganized as soon as possible. To function as a fire team the minimum personnel necessary is a leader, an automatic rifleman and a scout. If as a result of casualties the squad is reduced below this minimum personnel the casualties should be replaced by reinforcements. If this be impossible the squad should be broken up and its remaining members used to fill casualties in other squads. A disruption of the squad organization means a disruption of the entire fabric of infantry fire tactics.

Duties of the Squad Leader.

Fire control. The duties of the squad leader, like those of the section leader, are concerned with fire control and fire discipline. When the squad is acting as a part of the section, the duties of the squad leader in relation to the fire control, are usually limited to:

1. Watching for the fire control orders (or signals) of the section leader, giving the necessary orders to his squad, and insuring that they are carried out.
2. Observing and adjusting the fire of his unit.
3. Initiating and controlling the movement of his unit.
4. Participating in the fire when this does not interfere with more important duties.

The duty of making fire plans and orders does not ordinarily fall upon the squad leader. As a rule he has only to intelligently carry out the orders of his section leader. In the exceptional case where the squad is acting alone, or where the conditions of combat are such that the section leader is unable to properly perform his duties in controlling the fire of his unit, the squad leader will be confronted with the necessity for estimating the situation and making his own fire plans and orders. In this case his duties are similar to those of the section leader.

Fire discipline. As the squad leader is in personal contact with his men and can usually direct them by word of mouth, he is the leader immediately responsible for the maintenance of fire discipline within the squad. His duties in this connection are many and varied, and have to do with both fire and movement. The squad leader must:

1. See that his men recognize and fire at the designated target.
2. See that sights are set at the proper range.
3. See that the men fire at the proper rate.
4. See that the fire of the squad is properly distributed over the target.
5. See that each man takes a proper position for firing and properly operates his piece.
6. See that his men use cover to the best advantage while in the fire position, that they maintain the proper intervals and avoid crowding.
7. See that the men promptly obey all orders to open fire, cease fire or suspend fire.
8. See that the automatic rifle is kept in action, promptly replacing the automatic rifleman by a substitute in case he becomes a casualty, and seeing that the equipment is transferred before either man moves.
9. Constantly watch the state of the ammunition supply, and give notice to the section leader of need for ammunition before it becomes urgent. See that ammuni-

tion is removed from the dead and wounded and properly distributed. See that ammunition brought up by men from the rear is distributed and that the men are assigned to places in the squad. See that lulls in the action are utilized to replenish ammunition and fill automatic rifle magazines.

10. When movement is ordered identify the position to be reached or select a position if none is designated by the section leader.

11. Cause the squad to cease firing and prepare to move forward.

12. Lead the squad as a whole to the new position, either in column by a covered route or by rush in the open.

13. When the movement is executed by fractions, point out the position to be reached and designate the successive fractions to advance.

14. Cause individuals to make proper use of cover and otherwise properly conduct themselves while moving.

15. Lead the assault in person.

16. Reassemble the squad after the assault.

17. Inspect walking wounded cases and send them to section headquarters. See that seriously wounded are placed in a position covered from hostile fire, and first aid administered. (Men are never permitted to leave the squad or remain behind when it moves for the purpose of attending the wounded.) Report casualties to section headquarters, at first opportunity.

18. Prevent straggling or skulking.

19. Observe every detail of the personal conduct of his men and check all breaches of discipline and training.

20. Preserve order in his squad, and by his conduct and bearing set an example to his men.

The squad leader takes the position in which he can best carry out these duties. Specifically he should be able to see and verbally direct his men, see the enemy, and see the section leader (or guide).

Except in emergency the squad leader does not himself take part in the firing. The fire power of the squad is that of ten rifles (the automatic rifle being equivalent to 4 rifles). By himself firing the squad leader can add one-tenth to the volume of this fire. But to do this he must neglect other duties. He can usually add more to the fire power of his squad by devoting himself to his other duties.

In carrying out his duties the squad leader should use the orders and signals prescribed in the drill regulations. The manner of giving orders has been illustrated in a number of places in this course.

The squad leader may be used as replacement for the section guide or even the section leader, and should be qualified to fill these positions.

No. 4 of the rear rank is second in command in the squad, assistant to and replacement for the squad leader. He performs the same duties in the squad that the section guide performs in the section. He assists the squad leader in maintaining discipline, especially in the case of the men nearest him. When the squad leader advances to a new position the second in command assumes charge of all men remaining in rear. He automatically replaces the squad leader if the latter is called away or becomes a casualty, and designates a new second in command.

Summary. We have seen that the conduct of fire includes the duties of the leaders of the fire units, the section and squad leaders and their seconds in command, in the control of fire and the enforcement of fire discipline.

Fire control, including fire plans and orders, is the chief duty of the section leader. Fire control includes both fire and movement and their proper co-ordination in advancing the attack. Fire discipline is a secondary duty of the section leader, closely connected with his primary duty of fire control.

The squad leader is the commander of the smallest infantry unit or fire team. His duties in the conduct of fire also include fire control and the maintenance of fire discipline. His fire control duties usually consist in intelligently carrying out the fire orders of his section leader, although in emergencies he may be called upon to make his own fire plans. Being in immediate personal contact with all members

of his command he is the leader primarily responsible for the proper conduct of the infantry soldier in the fire fight, which is known as fire discipline.

CONDUCT OF FIRE IN THE DEFENSE.

The subject of defensive combat is covered in the course in Tactics. We are here concerned only with the conduct of fire of the infantry fire units (section and squad) in defense.

Tactics of the Defense.

Every combat, whatever the size of the forces engaged or the circumstances under which it occurs, takes the form of the attack of a position, in which one combatant (the attacker) advances against the position to take possession of it, while the other (the defender) occupies the position and endeavors to repel the attack.

The position may be very highly organized, including lines of trenches, obstacles, shell-proof machine gun emplacements, observation stations, etc. On the other hand it may, by reason of lack of time and opportunity, include no artificial works other than pits hastily dug for the shelter of individual riflemen or machine guns. In any case the defender avails himself of the shelter and other advantages afforded by the terrain in its natural state, as far as possible.

The defender may have no intention of contesting the possession of the ground when the attacker has reached the position. In this case he seeks a position allowing long range fire to the front, thus forcing the attacker to deploy and open the fire fight. Before the attacker has advanced to a locality from which an assault on the position is possible, or from which he can compromise the defender's retreat, the latter withdraws. Such a defense is known as a delaying action, and is usually undertaken to cover the retreat of a larger force.

In a decisive action the defender contests the occupation of the position by the attacker, both on the front of the position and within the area or zone which he occupies.

When opportunity affords the defender selects a position favorable for defense and strengthens it to the extent that the time and facilities at his disposal permit.

The troops of the defender are disposed in this position in accordance with a definite scheme of defense. In brief this is as follows:

Defensive areas. Having selected the general line on which he will offer resistance the defender picks the small areas along this line which lend themselves to defense. These will be localities which afford a good field of fire to the front and flanks, usually slightly elevated above the adjacent terrain, and affording natural concealment, shelter, and approach from the rear. Each of these areas should be able to protect its own front, flanks, and even its rear with fire, and adjacent areas should be mutually supporting, that is, each should be able to cover with oblique or flanking fire the fronts and flanks of the next adjacent areas on either side. This means that they should not be over 300 to 400 yards apart, and even less in very close terrain. Their actual location, however, will be fixed by the nature of the terrain.

In rear of this advanced line of defensible areas there may be one or more similar lines. These rear areas are so located as to cover with their fire the flanks and rears of the areas in front. They are also mutually supporting, and can continue the defense in depth, in case the areas in front are captured by the attacker.

Combat groups. Each of these defensible areas is held by a small garrison. They may include machine guns, if the particular locality affords a favorable field of fire for same. They always include infantry. Usually they will be garrisoned by a rifle platoon or section, exceptionally by a single squad, always by complete fire units (squads or sections). The size of the areas may vary from about 50 x 50 yards to 150 x 200 yards or exceptionally more. These small garrisons are known as combat groups. Their functions are:

1. To oppose the advance of the attacker by frontal fire, endeavoring to inflict upon him such heavy losses that he will be unable to reach the position.

2. To cover and protect the fronts and flanks of adjacent areas on either side, and to sweep with fire the unoccupied ground between groups.

3. Finally, to hold the ground occupied, even when the attacker has reached, and perhaps penetrated the position, by fire to their fronts, flanks, and even to the rear, and by close combat within the area.

The active defense. The foregoing is called the passive defense. The defender also employs more active measures, in the form of counter attack against any enemy who may have entered the position.

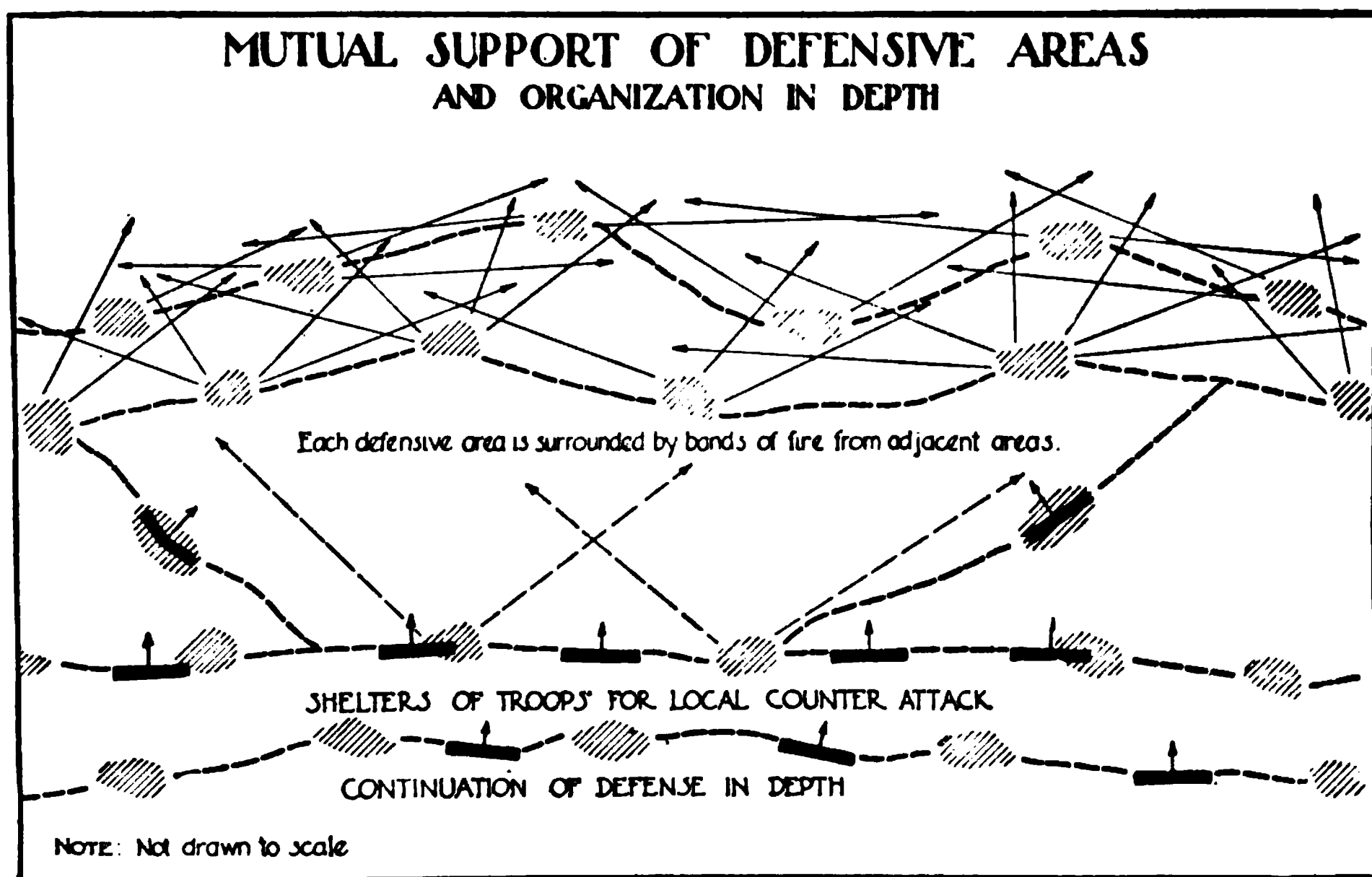


PLATE 353.

Strong points. To maintain the continuity of the defense, and to provide for active measures, a number of combat groups, either on one line or more, are grouped to form a *strong point*, under a single commander. An appropriate garrison for a strong point is a company. It may include from two to five combat groups. In addition to the small garrisons of the defensible areas a strong point includes a support, for example one platoon. This is used by the commander to reinforce threatened points within his area and for counter attack to expel any of the enemy who may have gained a lodgment in his area. These counter attacks should be delivered promptly as a surprise, if possible against the flanks of the enemy, and should be supported by the fire of the combat groups which are in a position to do so.

The larger units of the defense, battalions, regiments, etc., hold reserves which are used to reinforce the companies in the forward part of the position, and to deliver counter attacks on a larger scale.

The defensive position may be greatly elaborated, improved and strengthened by trenches to permit better fire and covered communication, obstacles to delay the attacker under the fire of the defense, shelters for the protection of the troops, etc. These works, however, do not alter the scheme of defense.

Summary. To summarize then, an active defense includes:

1. A number of small defensible areas occupied by fire units capable of defense to front, flanks and rear, adjacent areas supporting each other by fire, the whole being arranged to cover by fire all the ground over which the enemy must advance.
2. Grouping of a number of small areas into larger areas, including supports and reserves for reinforcement and counter attack.

In the conduct of his defense the defender first opposes the advance of the attacker by frontal fire, trying to prevent him from reaching the front of the position. As the attacker reaches the front of the position he receives, in addition to frontal fire, cross and flanking fire from the small defended areas. If he attempts to enter one of the areas he is opposed by fire from front and flank, and by the close-in defense of the garrison of the area. Finally, if he succeeds in gaining a footing, he is expelled by counter attack of mobile supports or reserves, aided by the fire of the area garrisons and by accompanying weapons and artillery.

The secret of a successful defense is in each area garrison maintaining itself in the area assigned to it. The determined resistance of a few combat groups has often brought about the collapse of an attack which had penetrated even to their rear.

Observation, circulation and intercommunication. The defensive position should always provide for observation to the front and within the position, facilities for the movement of troops, from one part of the position to another, covered as far as possible from the enemy's view and fire, and arrangements for intercommunication between the various elements of the defense. It is usually easier to provide these facilities in defense than in attack. The commander of each area (combat group or strong point) should have one or more sheltered observation posts from which he can observe the ground in all directions, the conduct of his own command, and the situation to his front, flanks and rear.

Field of fire. The field of fire to the front should be as wide as practicable, at least 400 to 500 yards, with little cover for the attacker. The firing line should not (except in delaying actions) be greatly elevated above the field of fire, thereby producing a plunging effect and sacrificing the advantages of grazing fire and long danger space (see Theory of Fire).

Dispositions of Front Line Platoons in Defense.

In this scheme of defense the front line platoon may be assigned to garrison one or more combat groups. The dispositions of the platoon within the area assigned to it would vary with the terrain and other conditions. If assigned to a single area it might place one section in position as garrison, holding the other in support to be used for the replacement of casualties, to reinforce threatened portions of the defense or meet emergencies or, exceptionally, for local counter attack, within the area assigned to the platoon. In case the platoon were holding a wide front, and the terrain was favorable for frontal fire, the entire platoon might be deployed for this purpose. If assigned to defend two areas the platoon might place a section in each. Each section might deploy its three squads for fire, or deploy two squads, holding one in support for replacement or reinforcement, etc.

The men would seldom be deployed at uniform intervals in line, but would be grouped by section or squad in localities within the area which were favorable for fire, whether frontal or oblique. Squads should not be subdivided except for very good reasons, and the two parts of a squad thus divided should be next to each other in the position. Sections should be maintained intact as single units when practicable, but it is not essential that they be deployed in a single line.

Location of the defenses. The general location of the position to be defended and the sectors or frontages assigned to units, together with the dispositions of the troops for defense, will ordinarily be set forth in the orders of higher commanders. When time permits, the location of combat groups and the troops to be assigned to each will be determined by the company and battalion commanders. In emergency, however, as in a meeting engagement or unexpected encounter with the enemy, the platoon may receive no orders other than as to the front it is to occupy. Even these orders may be lacking, and platoon, section, or even squad leaders may be required to decide upon the combat positions to be occupied by their units.

Organization of the position. Following the assignment of troops to their positions the available time before the opening of the attack will usually be devoted to work in preparing the position for defense. Trenches will be dug, obstacles placed,

shelter prepared, etc. Positions should be prepared by the troops who are to occupy them, as this insures more interest in the work on the part of the men.

Defense Plans.

To insure continuity and co-ordination of the defense, plans must be prepared in which a definite mission is assigned to each element of the defense. The elements of the passive or fire defense are the combat groups. When an entire platoon is assigned to a single combat group the platoon leader exercises command thereof. If the platoon be assigned to more than one group the leader supervises and co-ordinates the actions of the groups.

The defense mission of a combat group, for example a platoon, will be to defend and prevent the enemy from occupying a certain definite area. This will require that troops be disposed for fire to the front and flanks of the area, and that

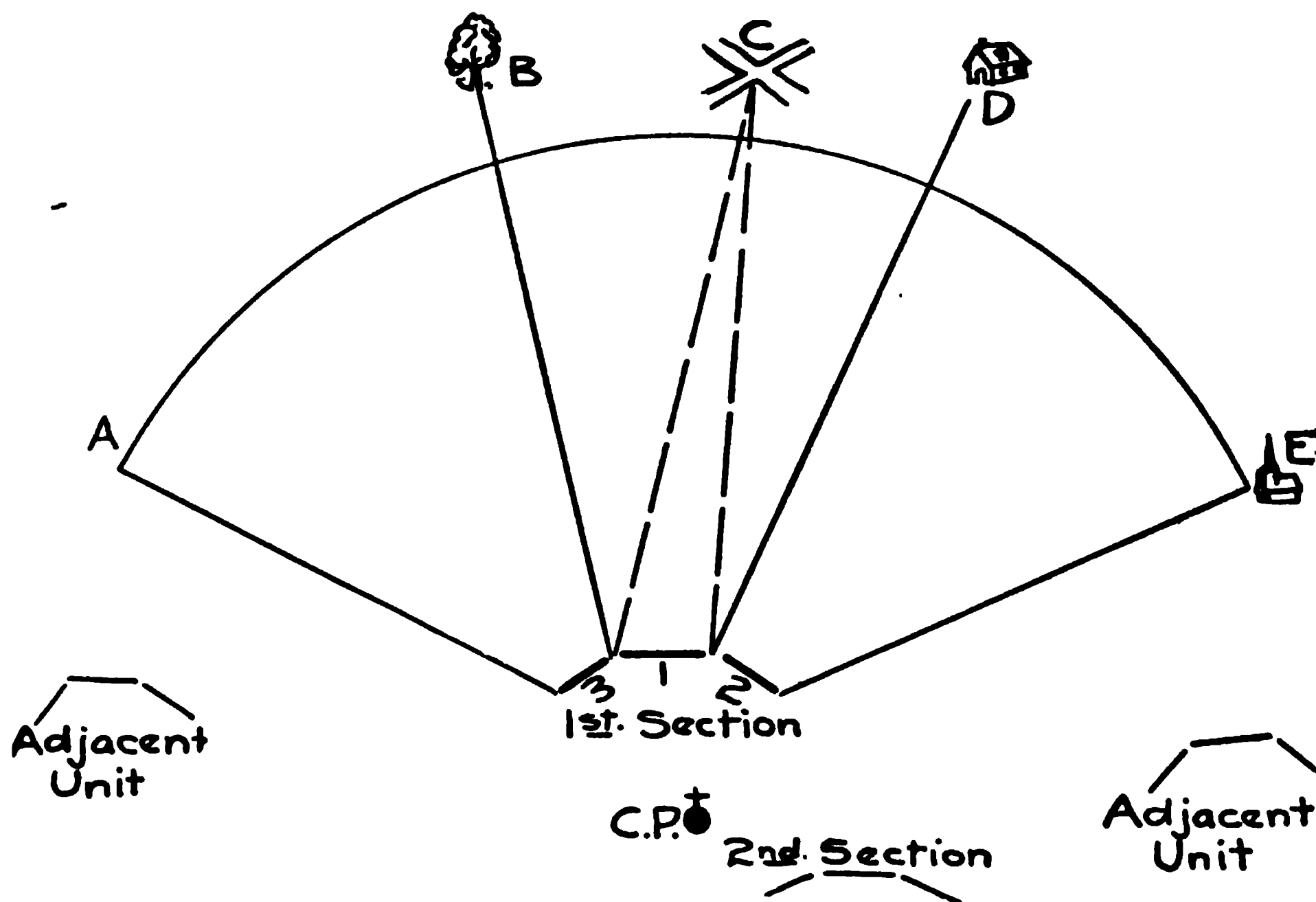


PLATE 354.—Platoon Defense Chart.

arrangements be made for defense to the rear in case of necessity. The mission will also require that the combat group cover with its fire certain belts of the terrain extending in front of adjacent combat groups in the same line and across the unoccupied terrain between groups. Special missions may also be assigned, for example to cover certain areas which cannot be reached by the fire of other units.

The platoon leader, or combat group commander, decides what troops he will place in position for the development of fire in the required directions, and what if any, he will hold in support, and where they shall be placed. He selects a command post and an observation post. These should be at the same place if possible. He indicates to his subordinates the nature and extent of the preparation of the position for defense, assigns tasks, and sees that the work is carried out in accordance with his plans of defense. He notes the preparations for defense in adjacent combat groups, co-ordinates his work therewith, ascertains what fire support he may expect from neighboring groups and tells their commanders of his own plans. He assigns to each section, squad or part of a squad, the position it is to occupy and the field of fire it is to cover. He prepares range cards or causes them to be prepared, for the combat group as a whole, and for each section and

squad, showing the sectors to be covered by their fire. He causes ammunition, including grenades and rifle grenades, to be distributed to the localities where it will be needed.

Observation and Sniping.

One or more observation posts are selected within the area of the combat group. These posts are manned by scouts in pairs. They should cover the entire field over which the fire of the combat group is distributed. The scouts or snipers prevent reconnaissance by the enemy by killing or driving back his scouts and patrols. During the attack they fire upon the leaders of the attacking troops whenever they can be identified. For this purpose the scouts are equipped with glasses.

Each sniper's post is assigned a certain sector to cover, and range cards are prepared. The sector is divided into three parts; right, center and left. The limits of these sub-sectors are defined by features of the terrain, thus:

Right sub-sector. Red barn to road junction.

Center sub-sector. Road junction to tall pine.

Left sub-sector. Tall pine to large oak.

Ranges to all prominent points are determined, thus:

Bend in road, 200. Fence corner, 400. Shed, 600. Tall pine, 800.

The division points of the sub-sectors, and the prominent points to which ranges are determined are indicated on the range card. (Plate 355.) One scout with glasses

studies the terrain and locates the targets. These he designates to the other, who directs fire upon them. For example: "Range, 600." Sniper looks to shed. "Right." He looks to right sub-sector. "Right." He looks to right of right sub-sector. "Scout behind bush." He picks up the target. Complete designation: "Range, 600. Right. Right. Scout behind bush."

The observer and sniper (rifleman) change places about once every 20 minutes, and the pair should be relieved once every two hours, as the duty is arduous and exacting. Reports of observations are made in the following form:

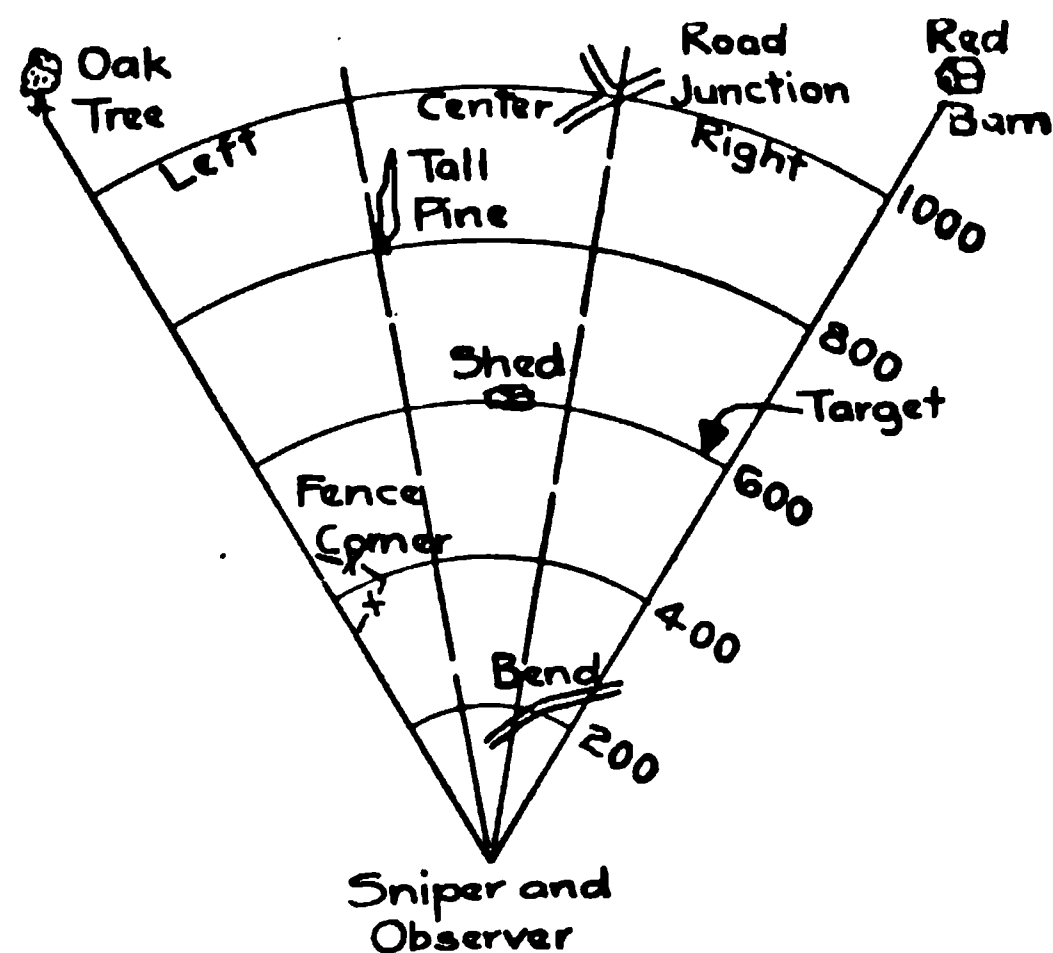


PLATE 355.—Sniper's Range Card.

Time.	Distance.	Direction.	Description.
10:05	700	N. 7° E.	Machine Gun

Sniping is a specialized form of musketry. In stabilized positions, where the posts are occupied for a considerable time, it may be developed to a high degree of efficiency and become an important element of the defense. To enable the snipers to fire on small and indistinct targets they may be equipped with telescopic sights.

Listening posts in front are established at dusk and relieved at daybreak.

While awaiting the attack, the trenches are manned by sentries, the remainder of the men being allowed to rest, usually in shelters near enough to the firing line so that they can promptly reach their combat positions when called.

Duties of Leaders in Defense.

The duties of the leaders of the fire units in defense are in general similar to those in attack. They have to do with the control of fire and fire discipline.

Because the unit is stationary, has opportunity to study the terrain, and enjoys concealment and cover in its fire position, and in movement within the defensive

area, most of the problems involved in the conduct of fire are simplified. For example, ranges to all prominent points are known, targets are easily designated by means of reference points with which all are familiar, trenches allow lateral movement of the leaders under cover, an ample quantity of ammunition may be provided and additional ammunition is easily brought up and distributed, etc.

In a proper plan of defense many emergencies are provided for in advance, and in the conduct of the defense the leaders have only to carry out plans already made. Nevertheless the attacker will do unexpected things. Situations not foreseen nor provided for will arise. In these situations the leaders will be called upon to exercise judgment in estimating the situation and making plans to meet it.

Counter attack. So far as conduct of fire is concerned the problems of the leaders of the fire units in the counter attack are the same as in the attack.

COMBAT PRACTICE.

Purpose and importance of combat practice. No system of musketry training is complete without combat practice. Such practice affords a test of the efficiency of a fire unit, with every condition of battle simulated, except the fire of the enemy.

Combat practice is accordingly the last phase of musketry training. It consists in the solution of fire problems by squad and higher units, using ball ammunition when practicable. If the conditions are such that ball ammunition cannot be used, or in preliminary instruction, blank ammunition or simulated fire may be employed. The course should be ultimately completed by firing the problems with ball ammunition.

By this training individuals are taught to co-operate in securing the maximum fire effect, and fire discipline is instilled to a degree not possible in any other method of instruction. Leaders are taught the practical application of fire direction and fire control. All are trained to the conduct of fire under conditions simulating those of actual combat as closely as is possible in time of peace.

Program of training. In the preliminary problems the first lesson to be taught is that of the correct application of fire. This should be followed by exercises involving the combination of fire and movement, until the squads and the individual members thereof are thoroughly familiar with the methods constituting the fire tactics of infantry in battle.

The mechanism of "fire and movement" having been acquired, advantage should be taken of every opportunity for practice in the lessons that have been learned.

Landscape Targets.

Practical instruction in the application of fire can best be given by the use of landscape targets.

The landscape target consists of a series of views of actual or imaginary landscapes, reproduced in color, and mounted in panels measuring 30 inches wide by 25 inches high. One or more of these panels is mounted on a vertical frame, the panels being placed side by side. Above the target panels, on the same frame, are mounted blank panels of the same width as the target panels, and either the same height or double the height. These blank panels are called the recording sheets. On the recording sheets may be traced a faint outline of the landscape shown on the target panels.

The frame is usually made to accommodate five target panels and the corresponding recording sheets. It consists of 6 vertical posts, spaced 60 inches center to center, extending about 7 feet above the ground, with braces and longitudinal pieces, to accommodate the target and recording panels. (Plate 356.)

A back-stop for the bullets must be provided. The firing point is placed 1000 inches from the target frame. It should accommodate at least 8 men, with sufficient intervals to permit easy firing positions (1 to 2 yards).

A number of sets of landscape targets, of from 3 to 10 panels each, showing a great variety of natural and artificial features of the terrain, are issued by the War Department to organizations of the Army, National Guard and Reserve Officers'

Training Corps. These targets are furnished in the form of paper sheets, with target cloth for mounting.

Harmonising the rifles. In firing on the target the riflemen aim at the features of the terrain on the target panels, but the rifle sights are so adjusted that the shot groups appear on the corresponding positions on the recording sheets.

The advantages of this procedure are:

1. The target panels, which are more expensive and difficult to replace than the outline recording sheets, are not injured by the firing, as no shots strike them.

2. Sheets of paper, large enough to take the anticipated shot groups, are attached to the recording sheet panels at the positions corresponding to the designated targets. After firing, these sheets may be removed for examination and grading. They also form a record of the firing which may be preserved if desired.

In order that the groups of shots aimed at the target panels may appear in the corresponding positions on the recording sheets, it is necessary to adjust the sights. This is known as harmonizing the rifles. It is done as follows. (Plate 356.)

A row of black pasters, one for each man firing (usually 8), is placed, with equal intervals along a horizontal line on the upper edge of the target panel (F, Plate 356). If the sights of the service rifle be set at 1300 yards a shot fired at a range of 1000 inches (the range of the landscape target) will strike about 23 inches above a point correctly aimed at. It is necessary also to set off one point right windage for the 1000-inch range.

A horizontal line is drawn on the recording sheet, 23 inches above the line of the bottoms of the black pasters, with a short vertical line ruled across it directly above each paster. This horizontal line is known as the "harmonizing line," and the vertical lines as "windage lines."

The squad firing now set their sights as indicated, take careful aim, each at the bottom of the black paster corresponding to his position in the squad, and fire. The shots should strike at the intersections of the harmonizing line and the windage lines. The first shot of one man may strike, for example at G, Plate 356. A change of 100 yards in the sight setting corresponds to roughly 2 inches vertical

change on the target, and one point of windage similarly corresponds to roughly 1 inch horizontally. The sight setting is corrected accordingly until the shots fall

within half an inch of the intersections of the harmonizing line and the windage lines. When the rifles thus register they are said to be harmonized.

With the rifles harmonized any shot fired at the target will strike the recording sheet at the harmonizing distance (about 23 inches) directly above the point on the target panel at which the shot was actually aimed.

Harmonizing with sub-caliber rifles or reduced charges. By proper sight adjustment any caliber .22 rifle or the service rifle with reduced charge may be harmonized in the same manner.

Shot groups. The collective cone of dispersion of average shots is practically a constant (see Theory of Fire). The areas cut from this cone or sheaf by vertical (or horizontal) planes vary with the range but are constant for any one range. They are called the vertical (or horizontal) shot groups. The size and shape and the distribution of the shots follow certain mathematical laws.

Without going into the mathematics of the theory of fire it may be stated that at any range there is a certain vertical rectangle which will contain 50 per cent of all shots of the vertical shot group. Outside of this is a larger rectangle which will contain 75 per cent of the shots. That is to say, if a squad of average shots with sights properly set, fire at the same point on a vertical target, 50 per cent of their shots will fall within a rectangle of a certain size. When fire is distributed over a linear target 50 per cent of the shots will fall within a certain zone extending above and below the line of the target, and 75 per cent within a similar zone of greater width.

These areas are called the 50 per cent and 75 per cent shot groups, and their dimensions at a range of 1000 inches (the range of the landscape target) are as shown in Plate 357. They are used in scoring hits on the landscape target.

Recording and scoring. The instructor selects the target at which the squad is to fire. This may be a single point (as a machine gun location), or a linear target on the target panel. The procedure is then as follows:

1. *If the target be a point.* The instructor pastes on the recording panel a sheet of paper, and marks thereon a point at the harmonizing distance directly above the point of aim on the target panel. A curtain of target cloth is lowered over the recording panel, and the squad fires at the designated target. The instructor then removes the sheet pasted on the recording panel, on which

the shot group of the squad appears. He places the wire frame showing the areas of the 50 per cent and 75 per cent shot groups (at 1000 inch range) of average shots, upon the sheet, with its center at the point corresponding to the target, and traces the outlines of the areas. All shots falling within the 50 per cent area count 2, and all within the 75 per cent area (but without the 50 per cent) count 1. (Plate 357.)

2. *If the target be a line.* The instructor traces on a sheet of paper the center line of the target as it appears on the target panel. This line may be straight or irregular. On either side of this line he draws two lines parallel thereto at distances of $1\frac{1}{2}$ and $2\frac{1}{2}$ inches, each extending a like distance beyond the ends of the target. These lines fix the limits of the 50 and 75 per cent zones of the target. These zones are divided into 10 (or any other number) of equal parts, by equidistant lines approximately perpendicular to the center line of the target. (Plate 358.) The



PLATE 357.

sheet thus prepared is pasted on the recording sheet in its proper position, the curtain is lowered, the squad fires, and the record sheet is removed as before.

This sheet is now scored for:

a. Target designation. All shots within the 50 per cent (inner) zone count 2. All within the 75 per cent zone, but without the 50 per cent zone count 1.

b. Fire distribution. Divide the total number of *shots fired* by the number of parts into which the shot zones have been divided (usually 10). This gives the number of shots that should appear in each subdivision had the *distribution* been perfect. Any shots in excess of this number in any subdivision count zero, all

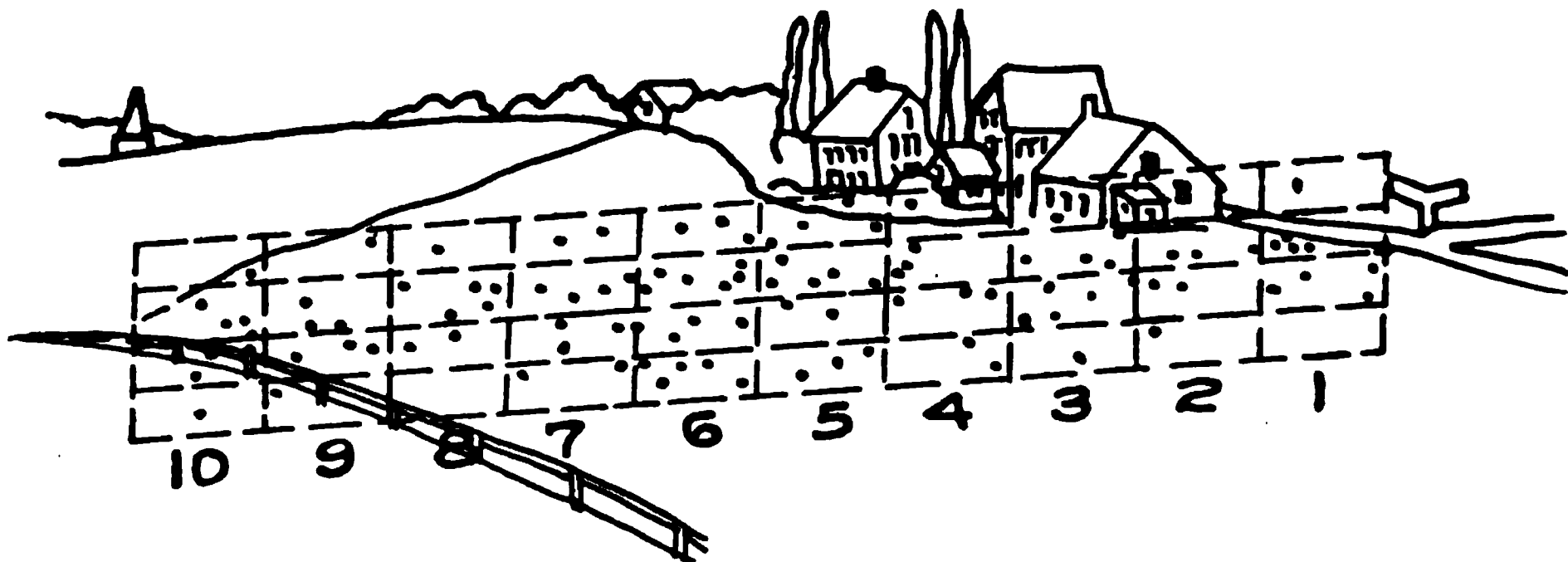


PLATE 358.

remaining shots within the 75 per cent zone count 1. That is to say, in any subdivision all shots within the 75 per cent zone count one each, provided the total is not in excess of the total shots fired, divided by the number of subdivisions.

Example of use of landscape target. (See Plate 356.) Fire orders: "Range—." (It is desirable to have range scales placed on targets as shown in Plate 356.) "Doorway of house. Machine gun. Fire at will."

The squad fires at the target designated (D), the shots recording on the upper panel at D'. The plate shows the covering curtain cut away, exposing the recording sheet to view. In order to compare the shot group with standard shot group, the small wire frame (Plate 357) showing the average 50 per cent and 75 per cent shot groups is applied as shown. The instructor may explain the actual size of these shot groups had the target been at the range assumed.

Advantages of the landscape target. As a means of instruction in combat firing the landscape target has a number of manifest advantages.

It may be set up at any locality where there is a back-stop for the bullets, and 1000 inches of fairly level ground. It very closely simulates the actual terrain in which combat firing takes place, and targets are designated in the same manner.

The short range at which firing takes place makes it possible for instructor and students to examine the target immediately after the firing, to note and interpret the results of, and find out the reasons for errors.

For example: A machine gun at a certain road junction is designated and fired upon. The shot group is found at a similar locality to the flank. The importance of correct target designation is practically illustrated. Fire is directed upon a linear target—a line of skirmishers in a certain locality. Upon examination of the result, all shots are found grouped at one or two points, while the rest of the target is untouched. The necessity for proper distribution of fire is at once apparent.

The results which would have been obtained had the firing been at the usual ranges, are easily calculated and interpreted. For example: The average dispersion of the rifle at 100 yards is about 8 inches laterally and 12 inches vertically. The average dispersion at a range of 1000 inches is easily calculated.

$$\frac{X}{8} = \frac{1000}{3600} : X = 2.2 \text{ inches, average lateral dispersion at 1000 inches.}$$

$$\frac{Y}{12} = \frac{1000}{3600} ; Y = 3.3 \text{ inches average vertical dispersion at 1000 inches.}$$

The shot group is found to measure 3.3 x 5 inches. Hence the accuracy of fire is less than average.

Results on the landscape target are easily interpreted for other ranges, thus making the results of the firing an actual test of the efficiency of the firers at battle ranges.

PRACTICAL EXERCISES.

Musketry is a practical subject, and practical demonstrations, exercises and tests are the most important part of the course. The subject is very easily presented in a practical manner.

The most interesting and instructive of these exercises are those which include firing on the range with tracer ammunition. These should be carried out if a range is available, especially at summer camps of instruction.

But even if no regular range is available many instructive exercises may be carried out without actual firing. It is often possible to establish a 1000-inch range for landscape target firing when a regular range is out of question. Also the 1000-inch range may be set up in an armory or any building where a space of 90 x 30 ft. and a backstop for bullets is available. Small caliber rifles may be used for landscape target firing. If no regular landscape targets are available, "home-made" targets may be used.

Musketry field meets are an easy means of stimulating interest in this important subject. The spirit of competition may be developed as in any other game.

The sand table is also a valuable means of instruction in target designation and small problems, and is of course available in all weather and seasons.

The following exercises are intended as suggestions for a great variety of practical work, which may be adapted to the conditions at the institution.

Exercise 1. To Demonstrate the Trajectory and the Concentrated and Distributed Sheaf.

This demonstration must be staged on the target range. Have an expert rifleman fire 3 shots each at silhouette targets at 100, 300, 500, 700 yds., using tracer ammunition.

Have a squad fire 5 rounds of tracer ammunition each, at a silhouette target at 500 yds.—automatic rifle 20 rounds. Next have squad fire 5 or 10 rounds each at a line of 8 silhouette targets at 5 yd. intervals and at a range of 500 yds.—automatic rifle 20 rounds. Each man should distribute his fire by traversing, as described in text.

Point out to the class the characteristics of the trajectory, maximum ordinate, danger spaces, etc., the beaten zone and the distribution of fire.

Exercise 2. Landscape Target Firing. Harmonizing the Rifles.

On the 1000-inch range set up the landscape targets, point out and explain their various features. Have an expert rifleman demonstrate the harmonizing of a rifle. Cause all men who are to fire to harmonize their rifles.

Exercise 3. To Demonstrate the Shot Group and Distribution of Fire. Landscape Target.

The rifles being harmonized, have a trained squad fire 5 rounds at the door of a house or other point on the landscape (automatic rifle to fire 20 rounds). Call attention to size of shot group. Show what this would be at 500 yds. Show distribution in 50 per cent and 75 per cent zones by use of wire frame.

Now have the squad fire 10 or 15 rounds at a linear target. Call attention to the distribution and score for hits and distribution as explained in the text.

This and other similar exercises may be made competitive between squads if desired.

Exercise 4. To Demonstrate the Effect of Errors in Estimating the Range.

Have an expert rifleman fire a number of shots at targets at various ranges, with correct and incorrect sight settings. Count the hits and compare results with the table on page 438.

Exercise 5. To Practice the Students in a Correct Method of Range Estimation.

Conduct the students to a diversified terrain where ranges to various prominent points or to men holding flags have been measured. There should be several stations, and ranges should vary from 300 to 1000 yds. At the first station the 100 yd. units of ranges to various points should be staked off, and pointed out to the students.

Now conduct the students to other stations and cause them to estimate various ranges by the prescribed method, and record on their pads. Have squad leaders average the estimates of their squads. Average the estimates of all squads. Announce the results and also the true range. Announce also the highest and lowest individual estimates recorded.

From 30 to 60 seconds should be allowed for estimating each range.

The instructor now causes the students to face in a direction in which various objects appear at various ranges. He then says: "Range — yds. What do you see at that range?" The students record the answers on their pads.

These exercises and variations of them should be repeated as often as practicable, on various kinds of terrain and under various conditions of light. The exercises may be made competitive, using the table for scoring, thus: Correct range, 900; students estimate, 800; score, 41.

Exercise 6. Calibration of Sights and Fingers.

On the side of a building mark off a number of equal intercepts 3 or 4 ft. wide. Place the students on a "station line" at a distance of 20 times the intercepts from the building (*i. e.*, 80 ft. away for 4 ft. intercepts). The instructor now explains the procedure and causes each student to find out where to place his cheek on the gun stock in order that the sight leaf may exactly cover one of the intercepts. Similarly the students determine the distance from the eye at which the first finger should be held to exactly cover an intercept. These positions should be fixed in the mind.

Having thus calibrated sights and fingers the students should be required to measure various lateral distances on the terrain or landscape target.

Exercise 7. To Teach Terrain Nomenclature.

On the terrain, landscape target or any other picture of a landscape, the instructor points out and names the various characteristic features of the terrain. He then causes the students to name various features which he points out, and to point out features which he names. This practice is continued until all are thoroughly familiar with the characteristic features and the terms used.

Exercise 8. To Teach Verbal Target Designation.

This exercise should be carried out first on the landscape target, photographs or views of terrain, and afterwards on the terrain itself.

The instructor will first demonstrate by designating various targets by the approved methods explained in the text. This should include both point and linear

targets, and should be done both with and without the use of reference points and sight leaf (or finger) measurements.

The instructor next points out a number of targets. This is done with a pointer on the landscape target. On the terrain it may be done by posting men with flags. The students are then required to write their designations on a pad.

The students are also required to point out targets designated by the instructor or by the other students.

In every case the instructor should give the correct answers.

The instructor then causes a student to designate a certain target to a squad. The members of the squad, using rests (box, bayonet stuck in the ground, etc.) then aim their rifles at the target designated. Other students check the accuracy of the aim.

These exercises or variations of them should be repeated until all members of the class are proficient in designating targets and recognizing targets from designations.

Exercise 9. To Demonstrate Target Designation by Tracer Bullet.

This exercise can be given only on a target range.

Three expert riflemen, representing the scouts of a section, are deployed on a front of about 100 yds. The class is grouped in rear at a favorable locality for observation. A number of targets are designated to the scouts, but not to the class. These targets include both point and linear targets.

Each scout, beginning at the right, fires 5 shots at the first target. This is continued on the other targets. Linear targets are designated by firing shots alternately at their flanks.

Intervals are allowed between firings on each target, during which the students enter on sheets issued to them the answers to a questionnaire about in the following form:

Target No. 4.

1. Did you recognize the target from the tracers fired by the right scout? The center scout? The left scout?

2. Give a verbal designation of the target (point or linear) as you recognize it. The instructor finally gives the correct designation of each target fired at.

Exercise 10. To Demonstrate Fire Distribution on a Linear Target.

This exercise, like the preceding, must be held on a target range.

A squad of expert or qualified riflemen is deployed 500 to 600 yds. from a line of 8 silhouette targets at 10-yd. intervals. They are equipped with tracer ammunition.

One rifleman now fires, distributing his fire (10 or 15 shots) over the targets, in the manner described in the text. The automatic riflemen then fires 20 shots, semi-automatic fire, distributing them. The entire squad then fires 15 or 20 rounds of distributed fire.

The instructor comments on the exercise during its continuance. The class then moves up to the line of targets and counts the hits on each of the silhouettes, grading the squad for hits and for distribution, as explained in the text.

Exercise 11. To Demonstate and Practice the Arm Signals.

The class is formed in double rank. The front rank is moved about 50 paces to the front and faced about. Each rank then takes intervals of about 5 yds.

The instructor now demonstrates to the class each of the arm signals prescribed in the I. D. R. After each demonstration each front rank man gives the signal to his rear rank file, who repeats it back.

The students then practice giving various signals to each other, both in the standing and in the prone positions.

Exercise 12. To Demonstrate and Practice Individual Movement.

The instructor causes a qualified assistant to demonstrate each of the individual movements described in the course in Scouting. The students are then required to practice the movements, each with another student coaching.

If this exercise can be given on a target range the taking of the prone position may be followed by firing a few rounds of tracer ammunition at a designated target.

Exercise 13. To Demonstrate and Practice a Quick and Accurate Method of Sight Setting.

The instructor, after describing the sight, and the importance of rapid and accurate sight setting, demonstrates sight setting in the prone position (or causes an assistant to do so).

The class is formed in two ranks at about one pace intervals. The front rank takes the prone position and sets sights for ranges announced by the instructor. The rear rank check the accuracy of the setting, each for his own front rank file. The ranks are then interchanged. The exercise is continued until each man is able to set his sight within 10 seconds of the announcing of the range.

The class is then divided into squads. Each squad in succession takes the prone position at 1 pace intervals. The instructor announces or signals a range and the men set their sights. At the end of 10 seconds the instructor orders: "Rise." He then checks the settings. Any man who fails to set his sight correctly within 10 seconds receives a score of zero.

Exercise 14. Test. Target Designation and Fire Distribution.

This fire exercise is conducted on the landscape target. Rifles should be harmonized.

The class is divided into squads and each squad is tested separately.

One scout of the squad is placed on the firing line and a linear target is designated for him. The remaining members take the prone position about 50 yds. in the rear of the firing line. Each is provided with 10 or 15 rounds of ammunition.

The members of the squad move forward one at a time to the firing line (taking intervals of about one pace). Each man obtains the target designation from the man next to him and opens fire. The squad is then graded for hits and distribution as explained in the text.

The exercise may be varied by causing the squad leader to verbally designate the target.

Exercise 15. To Demonstrate Fire and Movement by a Squad in Attack.

This demonstration should be given by a trained squad, and if possible on the target range, firing tracer ammunition. If no target range is available firing should be simulated. Each man should be marked with his number in the squad and his function (as "Scout," etc.). This may be done by attaching white canvas marked in black to each man's back.

The instructor deploys the demonstration squad at 5 yd. intervals, explains the combat duties of each man, and the reasons for his position in the squad.

The squad now advances by squad rushes, four men or two men at a time, or by infiltration, as explained in the text, firing tracer bullets or simulating fire, under its squad leader. The class follows up the movement, the instructor explaining each step.

Target designation and fire orders may be included in the exercise. If the exercise is held on the range, silhouette targets are erected, and the results of the firing are examined and graded.

This exercise may be divided into several parts and extend over several periods of instruction. A program for the exercise should be prepared in advance.

Exercise 16. To Practice the Students in the Fire and Movement of a Squad in Attack.

The class is divided into squads, and each squad in succession, or two or more simultaneously, each under its own leader, practice the movements demonstrated in Exercise 15.

Members of the class not taking part in the exercises at any time are required to criticise the various movements. If the exercise is held on the range with actual firing at silhouette targets, each squad is scored for hits and distribution.

Exercise 17. Competitive Problem. Conduct of Fire.

This problem takes the form of a contest between two squads and must be staged on a target range. Sixteen silhouette targets are erected (a less number will serve, if necessary). Each man firing is issued 30 rounds of ammunition.

The two opposing squads are placed as shown in Plate 359. Each has the same number of targets, in the same formation as the squad. A flag is placed in the middle of the group of targets. Each squad leader is told that he will fire on all

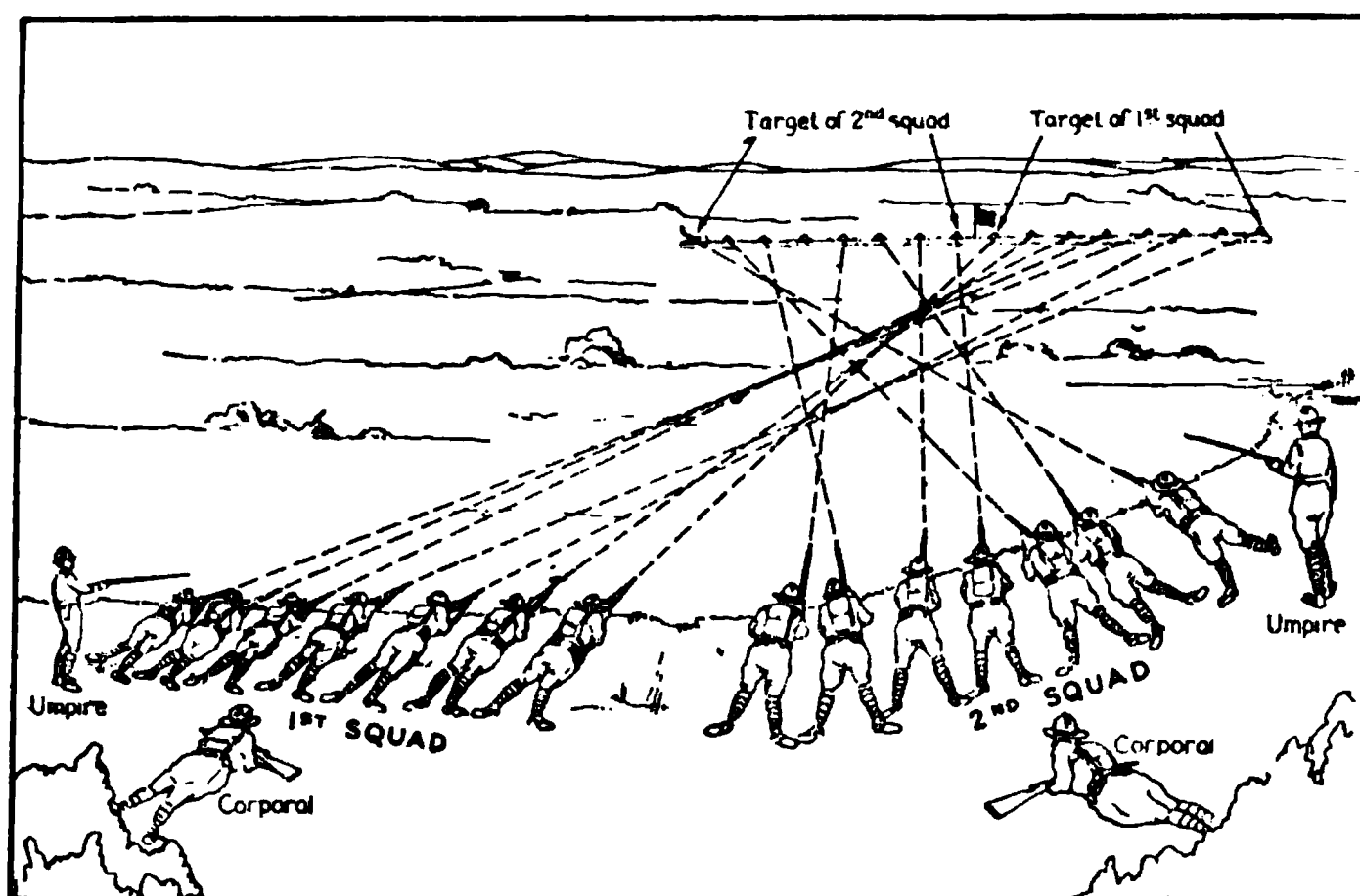


PLATE 359.

targets appearing to the right (or left) of the flag. His squad is not given this information. He is not allowed to use the flag in his fire order.

The squads advance towards the targets in skirmish lines. At a signal from the umpire (instructor) the targets appear. The squads take cover, and their leaders give their fire orders. The squads open fire. When a figure is hit it is removed, and the umpire rules out a man from the opposing team by tapping him on the shoulder. At the end of one minute the umpire blows his whistle. The squads cease firing and advance a designated distance in a manner indicated by the umpire (squad rush, half squad rush, infiltration). At the end of the movement they re-open fire. The exercise continues until one squad has shot down all the targets of the opposing squad.

Members of the class not participating, observe the exercise, and listen to the comments of the instructor.

Test Problems.

A great variety of small problems based on assumed situations, and illustrative of the tactics of the squad and section, can easily be framed, with a little ingenuity, and readily adapted to any available terrain. In the absence of a suitable terrain the problems may be staged on a map or sandtable. Such problems may also, of course, be carried out as demonstrations by the instructor.

The following are examples of such problems:

Exercise 18. Test Problem. Tactics of the Squad in Attack.

Equipment: Pad and pencil for each member of class. 9 silhouette targets.

Place: Any suitable terrain.

Procedure: The class is marched to the ground, where the situations (mimeographed) are handed out, one to each man. The instructor answers any proper questions. The students then solve the problem, writing out their solutions.

Situation: You are the leader of an infantry squad. Your section is engaged in a fire fight with an enemy. Your squad is the left squad of the section, in the position indicated by the silhouettes. (One silhouette represents squad leader.) The section leader is represented by the silhouette in rear. He has just signaled, "Squad rush," pointing to you.

Requirement 1. Your actions and orders.

Solution 1. I repeat back the signal. I select a new fire position 40 to 50 yards ahead. I order, "CEASE FIRING. Prepare to rush." I look along the line and see that my men are ready (sights down, pieces locked). I pass through the line, ordering, "UP," and lead the rush to the position selected. I take a prone position on the new line. When my squad is down, I work to the rear, where I can properly direct them, and cause them to resume fire as quickly as possible.

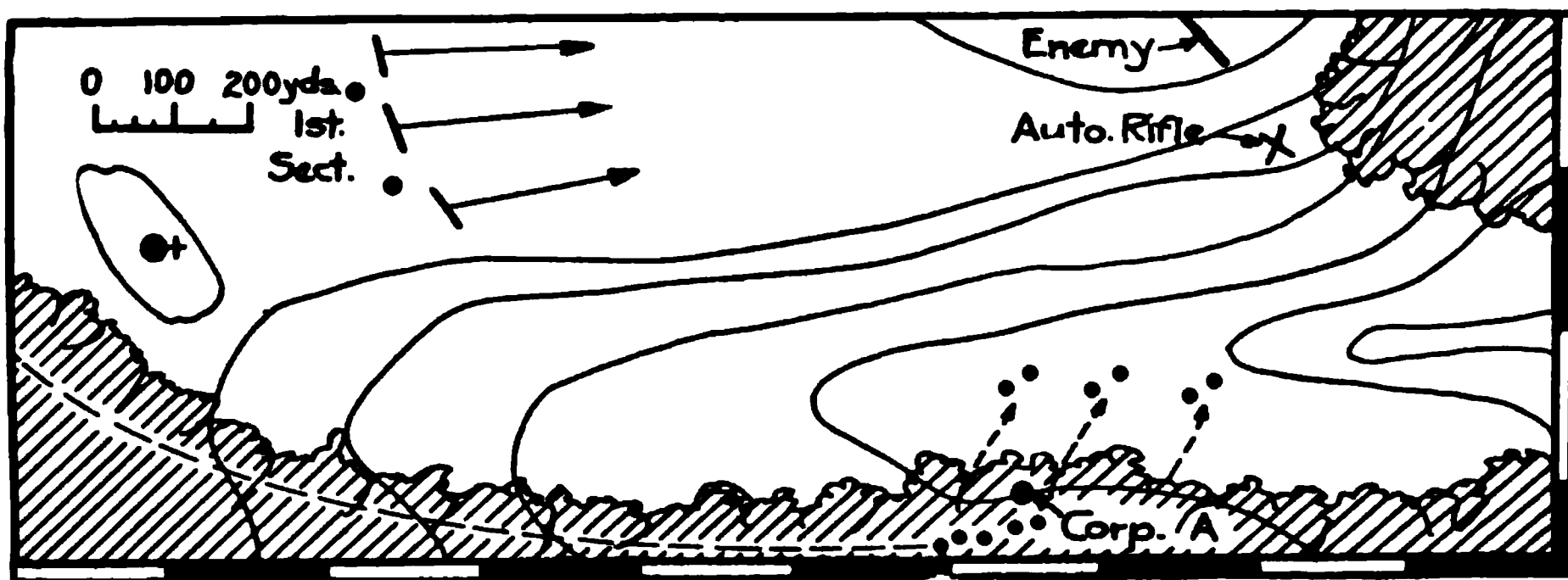


PLATE 360.

Requirement 2. You are Pvt B, No. 2, front rank, of the squad. Describe in detail your actions, from the first commands of the squad leader until the end of the movement.

Solution 2. At the first command I cease firing, lay my sight leaf, lock my piece, lie flat behind cover, draw my hands back to my chin, keeping my elbows down, rifle in right hand at the balance, ready to spring. At the command, "UP," I rise by straightening my arms and throwing my right leg forward, and jump off to the front, following the squad leader. I swing my rifle across my body, left hand at the balance, right hand at the small of the stock. I run fast, keeping my left shoulder forward. When the squad leader halts I move abreast of him, drop to the prone position and take such cover as is available. In taking the prone position from the run my left knee hits the ground first. I throw my rifle forward to the full extent of my arms. The butt hits the ground about 3 feet in front of my left knee. I roll forward on my left knee, my left elbow striking the ground next. This pulls the butt of my rifle back against my right shoulder. I roll to the right, until my right elbow strikes the ground. I adjust my sling, set my sight, raise my sight leaf, unlock my piece, and promptly resume firing.

Exercise 19. Test Problem. Tactics of the Squad in Attack.

Equipment: Pad and pencil for each member of class. Six prone and six kneeling silhouette targets. Three red flags.

Place: A terrain somewhat similar to that shown on accompanying sketch. (Plate 360.)

Procedure: The instructor conducts the class to the terrain on which the problem is laid, where the situation (on mimeographed sheets) is handed out, one copy to each man. The instructor explains the situation and answers questions. The students then solve the problem, each writing out his own solution.

Situation: You are Corp A, leader of the 4th Sqd, 1st Plat Co A, 1st Inf. Your platoon is engaged in a fire fight with the enemy. The 1st Sec is firing and advancing in the open. Your section has been sent through the woods to gain a position on the left flank of the enemy, and has reached this point (position of Corp A, as indicated on Plate 360). The six scouts leave the edge of the wood and start to advance up the slope when they receive fire from the locality indicated by those red flags (auto rifle, Plate 360). The scouts take positions as indicated by the silhouettes (prone), and open fire on the enemy. The section leader, from the edge of the woods, issues the following order to the three squad leaders, "Build up on the line of scouts and open fire." Your squad is represented by these kneeling silhouettes (in the woods).

Required: Your orders as squad leader.

Solution: "We are going to build up on the line of scouts by infiltration. Range from line of scouts, 300. Target indicated by tracers of our squad scouts. Jones (automatic rifleman) prepare to rush. UP. Smith (substitute automatic rifleman) prepare to rush. UP. Black (2nd in command), I am now going forward. Send up remainder of squad."

Exercise 20. Sand Table Test Problem. Tactics of the Section in Attack.

Equipment: Pad and pencil for each member of the class. Sand tables, complete, in the proportion of one to each 12 to 15 men.

Procedure: Reproduce on each sand table the terrain shown in Plate 361.

The situations, on mimeographed sheets, are handed to the class. Each student solves the problem, writing his solution on his pad.

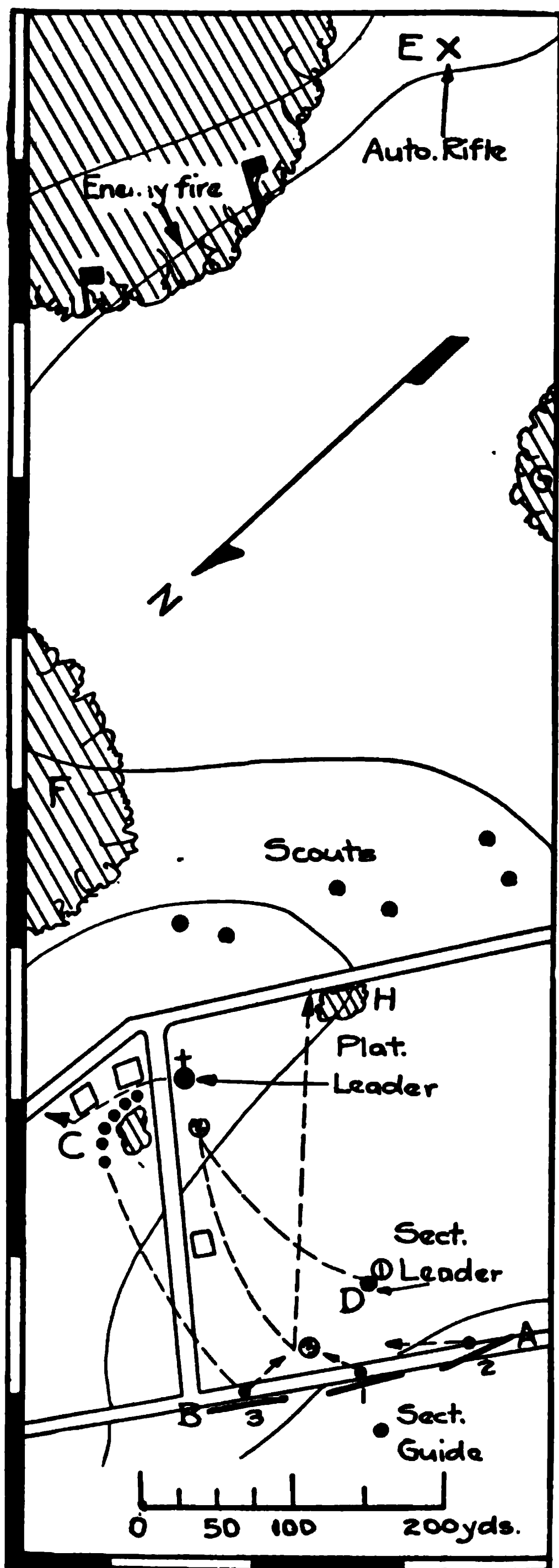


PLATE 361.

General situation. Reds and Blues are at war. The territory shown on the map is Red. The Blues have taken the offensive, and are invading Red territory. The general Blue advance which had halted to reorganize has just been resumed.

Special situation 1. The 1st Plat, Co A, 1st Inf, is advancing on a front of 200 yards, direction of advance, S 45° E, with other platoons on either flank. The 1st section in line of skirmishers has just reached the Road *AB*, its right element at *A*. The six scouts of the section are 300 yards ahead (position indicated by white pins). The 2nd section is 200 yards in rear. The platoon leader and platoon headquarters are near *C*. You are Sgt X, section leader of the 1st Sec. At this moment, when you are at *D*, heavy rifle fire opens to your front. You note one casualty on your right.

Your scouts have opened fire.

Requirement 1. Your actions and orders at this time, and brief reasons therefore.

Solution 1. I signal "HALT," and run rapidly forward to a position from which I can see to the front, and be near to platoon headquarters.

Reasons. Personal reconnaissance is the basis for estimates and orders. I must be in contact with my platoon leader, from whom I expect orders.

Special situation 2. The platoon leader, from near *C*, signals you to him. When you reach him he orders; "The woods in our front and the high ground to the right (*E*) are strongly held. Build up the line of scouts with the first section. Range 500. I will remain here. Move out."

Requirement 2. Your actions and orders at this time.

Solution 2. I note that my section is lying down and under cover. I return to section and signal squad leaders to me. I point out to them our line of scouts engaged. I order: "Enemy hold edge of woods and crest in force. Build up line of scouts and attack entire front. Range 500. I will be near those bushes (pointing to *H*). Move fast." I move directly to a position near the bushes (*H*). The section guide joins me when the section has filtered to line of scouts.

Special situation 3. You are now Corp A, leader of the left (3rd) Sqd of the 1st Sec. You have just received the order of your section leader, as follows: "Enemy hold edge of woods and crest in force. Build up line of scouts and attack entire front. Range 500. I will be near those bushes. Move fast." You saw your scouts move past the buildings at *C*, just as the enemy opened fire.

Requirement 3. Your actions and orders.

Solution. I lead my squad (in squad column, 5 to 10 paces distance between men) under cover of buildings to where I can see scouts, signal, "HALT," and order: "This section will attack enemy in woods to the front. Range 500. *B* (automatic rifleman) move to line of scouts." When *B* is well started I order, "*C* (substitute) follow *B*." When *C* is well forward I order, "*M* (second in command) take charge, and send up rest of squad." I move up to rear of line of scouts. *M* continues to feed men forward, coming last himself.

Special situation 4. Sgt X's whole section is in a position and engaged with enemy in edge of woods and on crest to right. He observes the fire of what appears to be an automatic, from hillside (*E*). It seems to be undisturbed and the tracers of the scouts do not indicate this target. Corp Q, section guide, has now joined him.

Requirement 4. Your actions as Sgt X, at this time.

Solution. Sgt X orders Corp Q: "Range 500. Reference, stump on crest. One sight right. Target, automatic rifle. Fire tracers." Sgt X attracts the attention of the leader of the center squad, and signals: "Range 500" (points to where tracers are outlining target): "Shift your fire to right."

Special situation 5. Sgt X hears heavy fire from the woods on his left (*F*). Lt A, and platoon headquarters have moved forward from the houses at *C*. Sgt X has seen or heard nothing of them for the last five minutes. He sees tracers from scout of section on his left (in edge of woods) outlining his target. Apparently, the section on his left is also attacking his target. The enemy's fire seems to slacken.

Requirement 5. Sgt X's estimate of the situation and orders at this time.

Solution 5. Sgt X's estimate of the situation.

Mission: To attack—to push forward.

Enemy: Enemy fire is apparently slackening. His position is difficult if the section on my left or right gains the woods. (Only fire I am exposed to is frontal.)

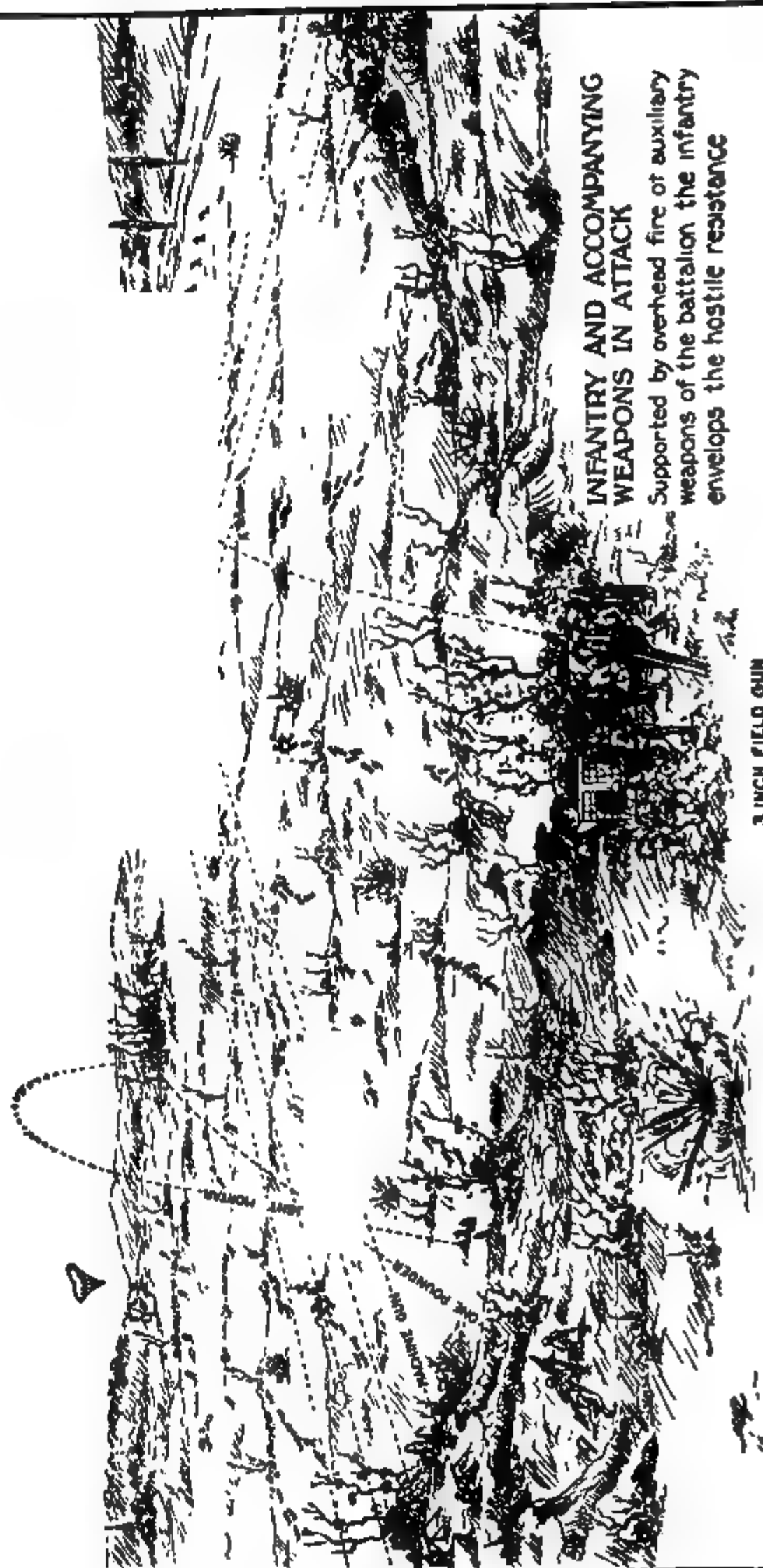
Own troops: At present the platoon on my left is well forward and on the flank of the position. There is also a platoon on my right. Its scouts must be getting into the woods on my right by now (G). Therefore I need not fear flank fire from these woods.

Terrain: The ground to my front affords concealment in grass, yet permits firing.

I consider the advisability of remaining in position, and pinning the enemy down with fire or of advancing. If I remain in position and the units from the flank close with the enemy they must leave their zones of action, and change their direction of advance. Under cover of their fire and my own I believe I can advance and assault the hostile position.

I decide to advance by squad rushes and close with the enemy. I attract the squad leaders' attention, and signal: "Squad rush," pointing to the left.

Y



INFANTRY AND ACCOMPANYING WEAPONS IN ATTACK

Supported by overhead fire of auxiliary
weapons of the battalion the infantry
envelops the hostile resistance

3 INCH FIELD GUN

CHAPTER XIV.

TACTICS

INTRODUCTION.

Success in battle, whether attack or defense, is the aim of all military training. Everything that you have studied in this course, and everything that you will study in your further course of military training, has that great end in view—*success in battle, or victory*.

To be successful in battle our troops must be *well trained* and *well led* or *commanded*. To be an efficient officer you must be able to *train* and to *lead* your men.

Some day you may lead American troops into battle, and the lives of those men and the honor of your country will be in your hands. Do not imagine that you can meet these grave responsibilities unless you have *prepared* for them.

This course of military training is intended to make you *a leader of men*. But it will not be wasted even in the happy, but most unlikely event that we shall have no more wars. The powers of mind and the traits of character which distinguish the leader are the same in peace as in war. It is only in the nature of the training required that we find a difference. Common sense, good judgment, the ability to marshal and weigh the evidence and correctly estimate the situation, the power to make a decision, and to express it in clear, direct and forceful language, the courage to cling to one's plans and carry them out vigorously and promptly in spite of all difficulties, the traits of mind and character which enable a man to command the confidence, respect and loyalty of his subordinates, and to call forth their best efforts—all of these things are as characteristic of the successful business man or captain of industry as of the successful leader of troops in battle. It is confidently asserted that there is no other known form of training better fitted to develop these essential characteristics of leadership than a proper course of military instruction.

Tactics is the art of leading or commanding troops in war, and is the final test of all military training.

Minor tactics means the leadership of the smaller units, usually any force less than a division. This course in minor tactics is limited to the infantry rifle platoon, in attack and defense, on the march in advance and rear guard, and in camp on outpost. These are the principal duties of the platoon, and when you have thoroughly mastered them you will be qualified to take command of a platoon. You will be prepared to profit greatly by your practical experience, and should soon become an efficient platoon leader.

It is to be remembered that the greatest battles are made up of the small combats of the infantry platoons. These small infantry units win the local successes which enable the great army to win the battle. The infantry platoon is the keen cutting edge of the military tool, and its leader is the most important man in the army. All other arms are auxiliary to the infantry. They exist solely to aid the infantry platoon in defeating its enemy.

No officer is qualified for high command unless he is familiar by study and training with the tactics of the small units, a knowledge of which must form the foundation for the training of officers for the higher commands. The non-commissioned officer who is fully qualified to lead a squad may safely be intrusted with the command of a section. The qualified section leader is fitted to undertake the duties of platoon leader, and so on. In each grade a properly instructed officer acquires the proficiency which justifies his promotion to the next higher grade.

The combat tactics of what are called the *fire units*, that is, the infantry squad and section, are included in the course in *Musketry*, which is in fact a part, and a very important part of *Tactics*.

The *fire units* (squad and section) deploy on one line. The platoon and all larger units deploy on two (or more) lines, and their parts can maneuver with reference to each other. They are, hence, called *Maneuver* units. (See Plates 361, 362 and 365.)

ORGANIZATION.

Organization in a military sense means the composition of an army, the different arms or branches which it includes, and the units of gradually increasing size of which it is composed.

Organization and tactics are of course very closely related, and to understand tactics it is necessary that we have some ideas concerning organization.

The purpose of organization is to make possible the effective and united effort of the many men of which a great army is composed, with all the various weapons which they use.

The organization of an army is not unlike that of the human body. A mass of bones, nerves, brains and muscle thrown together do not make a body, but only a heap of refuse. And so a mass of men brought together do not make an army, but only a helpless mob.

The scheme of organization is that a small number of men are brought together and organized as a unit under a single commander, smaller units are successively combined to form larger, each unit being complete in itself under its own commander. Every small unit is part of successively larger units, and every large unit is composed of smaller units. The commander of a unit controls all the small component units, through their commanders, who are subordinate and responsible to him. And, finally, we have the complete army completely under the control of one man, who is called its commander-in-chief.

Each infantry regiment consists of its headquarters troops, a howitzer company (armed with 37 mm. guns and light mortars), and 3 battalions. Each battalion consists of its headquarters troops, 3 rifle companies and 1 machine gun company. Each rifle company consists of its company headquarters and 3 rifle platoons.

It is in the organization of the infantry rifle platoon that we are now specially interested.

The *platoon* is the smallest infantry unit which is habitually deployed in depth, and which therefore possesses the power of maneuver. It is the largest unit permitting of direct personal leadership and fire control in battle.

It consists of one 1st or 2nd lieutenant, platoon leader; one sergeant (platoon sergeant), second in command; four privates, runners, agents of communication for the platoon leader; and two sections.

Each *section* consists of one sergeant, section leader; one corporal, section guide and second in command; and three squads. The three squads of the 1st section are designated as 1st, 2nd and 3rd; those of the 2nd section as 4th, 5th and 6th.

The *squad* is the smallest unit in the infantry organization. It consists of a corporal, who is squad leader, and seven privates. It is organized, equipped and trained, so as to possess in itself all the elements of a complete fire and maneuver team.

The organization of the squad and its weapons are discussed in the course in Musketry. The platoon has no weapons other than those of its squads.

There are 57 men in the rifle platoon: 1 platoon sergeant, 2 sergeants, 8 corporals, 46 privates 1st class and privates. All of these take part in combat. The platoon is exclusively a combat unit. Each subordinate leader and each man has definite duties to perform and a definite part in the battle team-work of the platoon.

The platoon leader controls and directs his platoon through his two section leaders. The section leaders in turn control and direct their sections through the squad leaders. The latter control but 7 men.

The platoon leader maintains intercommunication with his two section leaders, with company headquarters, and with adjacent units, and in emergency may sometimes communicate directly with the supporting weapons—machine guns, howitzers

and one-pounders. The personnel of platoon headquarters includes the platoon sergeant and four runners. Their chief duty is to assist the platoon leader in maintaining intercommunication.

The usual means employed are verbal orders, arm and whistle signals, and messages (usually verbal) by runner. During combat the platoon leader usually sends one of his runners to company headquarters. This man is used by the company commander to communicate with the platoon from which he came.

The platoon sergeant is second in command. His duties include: (a) Replacement for the leader, and (b) assistant to the leader. He evidently must have the personality and training which will qualify him to fill the position of platoon leader.

Section leaders, section guides and squad leaders all have definite duties in combat, which are concerned chiefly with the conduct of fire, and are discussed in the course in Musketry.

THE APPLICATORY SYSTEM.

The method of instruction followed in this course in tactics is what is called "the applicatory system." It is now generally known as the best method of teaching the art of war and is used in all modern armies. The student will note also that the same method is employed in the other subjects in this text.

The applicatory method is a practical system of teaching the art of war, in which the conditions of actual warfare are simulated or represented as closely as possible in time of peace. Briefly the applicatory system includes:

- (a) A statement of the principles of the art of war, based upon past experiences.
- (b) A demonstration of the practical application of the principles to an assumed case or "situation." This demonstration may be given on a map or sand table, or on the ground, with "demonstration" troops especially trained for the purpose.
- (c) Practical problems and exercise to practice the student in the application of what he has learned.
- (d) Tests to determine the student's knowledge and proficiency.

Tactical Problems.

Let us now see how tactical problems, whether in time of peace, or in the field in war, are presented and solved.

The problem opens with a statement of certain imaginary conditions, constituting what is called "the situation." Usually the situation is divided into two parts, known as the "general situation" and the "special situation."

The *general situation* describes the conditions in the theater of war as a whole, and is known to both sides. Ordinarily it relates that the Blues (our own forces) and the Reds (the enemy) are at war, or have been at war since a certain date, and defines the boundary line between the hostile states. The strength and locations of the opposing forces, their respective states of mobilization, training, etc., may be given. Certain important past events of the war may be related, as that the Reds were defeated in a battle on such date, and are now retreating, etc. The apparent intentions of one or both sides, so far as these might be judged from their known actions, may also be stated. Finally, certain details as to weather, season, important extraneous matters, such as possible intervention of allies, etc., may be given.

The *special situation* sets forth in some detail the (imaginary) circumstances surrounding some particular body of troops, of which the student is presumed to be the commander or one of the subordinate commanders. These will usually include:

1. Date and hour at which the situation opens.
2. Strength, composition, location and distribution of the command.
3. Detailed information concerning the enemy, to any assumed degree.
4. Strength and location of friendly troops in the vicinity.
5. Orders and messages received.
6. Detailed information concerning the terrain and other special conditions.

The problem then concludes with certain "requirements" constituting the "solution" of the problem. A complete solution includes:

1. The commander's (or leader's) "estimate of the situation."
2. His "decision," or intentions, expressed in a few words as, "to advance to X."
3. His definite plan of action, based on the decision. This plan should be in such detail that a competent staff officer or subordinate could prepare the necessary orders, therefrom.
4. His orders, written or verbal, exactly as they would be given.
5. Any messages sent by the commander.
6. Any actions taken by the commander in addition to the above, such as ordering reconnaissance, conferences with subordinates, personal investigations, etc.

Estimate of the Situation.

Being confronted with the "situation," the leader must decide what to do and how best to do it. He must then give the necessary orders to his men and see that these orders are carried out.

It may here be observed that such problems are not limited to tactics, but are constantly presented to leaders in all lines of human endeavor. And they may be and should be solved by the same systematic processes of thought that are prescribed for the military profession.

In the artificial problem of the class room the "situation" is set forth as a statement of certain facts or probabilities. In an actual case the "situation" will include everything that is known to the leader, and especially the results of his own personal investigations, or reconnaissance.

The "estimate of the situation" then is a logical process of thought culminating in a tactical decision.

It has been found by experience that better results are obtained if this estimate is made in a certain definite order or sequence. It is not desirable to restrict or limit the mental processes, nor is it possible to do so. But when all are trained to think along definite lines, quicker, better and more uniform results are obtained, and there is less likelihood that matters of importance will be overlooked. The program prescribed guides and assists the mental processes by insuring the consideration of all matters of importance in proper sequence, without restricting independence of thought.

The sequence is as follows:

1. *The mission.* What is to be accomplished?
2. *The enemy.* Everything that is known concerning him.
3. *Our own forces.* This includes both the immediate command and supporting troops which might influence the decision.
4. *Conditions favorable and unfavorable.* The most important of these is the terrain, which always greatly influences tactical operations. Other possible conditions are weather, season, time of day, etc.
5. *Courses open.* A review of various possible methods of accomplishing the mission, with a comparison of the advantages and disadvantages of each.
6. *The decision.* A brief statement of the course of action determined upon.
7. *The plan.* A detailed statement of the part to be played by each element of the command.

The solution of a tactical problem may also be approached as follows:

- 1st. What task is to be accomplished? (Mission.)
- 2nd. What facilities are available to accomplish the task? (Our own troops, advantages afforded by the terrain, other favorable conditions.)
- 3rd. What difficulties will interfere with the accomplishment of the task? (The enemy, unfavorable features of the terrain, other unfavorable conditions.)
- 4th. In view of the facilities and difficulties what should be done to accomplish the mission and exactly how should it be done? (The decision and plan of action.)

Examples of the "estimate of the situation" will be found elsewhere in the text.

ORDERS.

Tactical plans or decisions are carried out by means of orders given by the leader to his subordinates. These orders are always given to the *next* subordinate. For example: A platoon leader gives orders to his *section* leaders. He should never give orders direct to the squad leaders, except in emergency.

When in emergency it is necessary to give orders direct to a lower subordinate his superior should be promptly notified of the action taken. A company commander will obey the direct orders of his regimental commander, but he should inform his immediate superior of any orders thus received.

It will be evident that if the commander is not sure in his own mind his irresolution will be reflected in his orders, and communicated to his subordinates. Accordingly, he should never begin to issue orders until he has fully estimated the situation and formulated a definite plan of action. This plan is then communicated in orders clearly expressed, so that there can be no possibility of misunderstanding. Good orders cannot follow a faulty or indefinite plan, but the best of plans will be useless unless the subsequent orders are properly drawn. Vague orders are a sign of irresolution and will certainly result in indifferent execution.

The issue of orders is accordingly a vitally important duty of all leaders, and the ability to issue good orders is acquired only by practice in preparing orders to meet various assumed concrete cases. Tactical problems should generally include the issue of orders, whether written or verbal.

Precision in orders. The student should observe, at the outset of the course, that *precision* in the preparation of orders is of the first importance. It is not sufficient to merely outline what the orders would be, or to write "sketchy" orders "*about* as they would be given." This would tend to develop careless habits which would be difficult to overcome. Careless approximations cannot be permitted in orders nor in training in their preparation. The student should prepare the order as seriously and painstakingly as if the success of an operation depended upon it. Every idea must be expressed briefly and clearly. When orders are called for in problems this means orders *exactly as they would be given* in the field, and not a conversational approximation. Precision should be and will be insisted upon. Indifferent training in this important matter may be worse than no training at all.

The orders of the larger units are usually in written form, but in the smaller units with which we are dealing (squad, section and platoon) orders are habitually verbal or conveyed by signal. Verbal orders, whenever practicable, are given in the form of *commands* as prescribed in the drill regulations. The standard commands and signals, described in the courses in Infantry Drill Regulations and Musketry, will be applicable to the majority of situations of the small unit, both on the march and in combat.

Every profession has its characteristic language, and this is true of the military profession. If you were a doctor, and you talked to a man who claimed to be a doctor you would soon discover whether or not his claim was true *by the language he used*. If he did not speak in professional terms you would know he was a fraud. It is exactly thus in the military. A company of trained soldiers is intrusted to the command of an officer they have never seen before. As he gives orders they notice at once that he does not use the professional language they are used to. They lose confidence in him at the outset. And rightly so, for if he knew the military game he would use military language.

The most important characteristic of an order is clearness. It must be understood. Usually clearness and brevity go hand in hand. Use only such words as are necessary to express your meaning. Avoid ambiguity—that is any expression which might have two or more meanings.

Use positive, definite language. There should be no arguments in an order. Avoid such expressions as: "if possible," "if you think best," etc. Such expressions show irresolution and a desire on the part of the commander to transfer part of his responsibility onto his subordinate. Tell the subordinate exactly what to do with no "ifs" or "buts."

Do not interfere with subordinates by telling them in great detail *how* to do things. If they are properly trained they will know how. Tell a subordinate exactly what to do, but not *how* to do it.

The orders of a small unit should never attempt to provide for events very far into the future. Platoon and section leaders are at all times personally present with their commands and can give orders to meet each situation as it arises. Orders which look too far into the future are very apt to require countermanding, which has a bad effect on the troops. The reasons for this will be easily understood. The platoon is a very small unit in close contact with the enemy. The situations which confront it may change very suddenly. A very small event, occurring within a small area in perhaps a few seconds of time, and which would have no influence at all on the plans of the division commander, might cause a complete change in those of the platoon leader. Also the latter is with his platoon, exercises personal control over it, and is able to give orders promptly to meet any emergency that arises. The period of time necessarily covered by orders varies directly as the size of the unit concerned. Those of the commander-in-chief may cover a period measured by days, even by weeks. Those of the platoon leader cover a period which is measured in minutes or even in seconds.

But while the *orders* of the platoon leader are limited to a single situation, the same is not true of the *plans* on which orders are based. To be able to meet an emergency promptly with appropriate orders, the platoon leader must have thought of and planned for it in advance. Accordingly, the plans of the leader, as distinguished from his orders, must contemplate not only the situation which immediately confronts him, but all other situations which are reasonably possible. While he cannot foresee what may happen at any particular instant, his training and experience should have made him familiar with the nature of the various situations which may arise during combat, and the measures necessary to meet them. These measures constitute his plans, and when the emergency arises he should be able to sense the situation promptly, and as promptly issue the necessary orders to meet it. Moreover the dispositions of his platoon at any instant, while appropriate to the situation which then confronts them and to the task they are about to undertake, should also be such as to provide against disaster, and to permit taking advantage of any favorable opportunity. Proper battle formations and increasing vigilance in the way of observation and reconnaissance, will meet these requirements.

It is more difficult to give a good verbal order than a good written order. A written order may be studied, and errors corrected before it is issued. In the case of a verbal order, however, the leader must be quite clear in his own mind as to exactly what he is going to say, before he opens his mouth. If he stumbles through his order, repeating and correcting himself, he is very apt to be misunderstood, and certain to undermine the confidence of his subordinates. On the other hand a good verbal order has a more stimulating effect on those who receive it than any written order could have. There is no surer indication of the training and capacity of a leader than his verbal orders—and this is instinctively felt by all who listen to him. If the leader knows the game and is sure of himself, the language and tone of his verbal orders will show it, and inspire the confidence of his men.

COMBAT. THE OFFENSIVE.

Decisive results are achieved only by the attack. The attack in mobile warfare makes the greatest demands upon the infantry and requires the highest degree of training. Troops which can attack can defend. Accordingly a proper system of training for American infantry should be based upon the requirements of maneuver and attack in open warfare, and offensive combat is regarded as the most important part of infantry training.

The final purpose of all preparation for the attack, the concentration of troops, disposal of the artillery, arrangements for the supply of food and ammunition, etc., is to place the infantry platoon at the proper place, at the proper time, properly equipped and led, so that it may go forward and run over its adversary.

The battle itself, at the point of contact with the enemy, is essentially a platoon leader's problem. However great the forces engaged the combat consists of a number of local fights by infantry platoons, acting chiefly on their own initiative. It is the exception rather than the rule when company, battalion and higher commanders can influence the conduct of the assault platoons by means of information and orders, once they are committed to the attack. Once the troops are committed it is only by the use of the reserves and effective direction of the fire power of the auxiliary weapons that the higher commanders can influence the course of the combat.

A Birdseye View of Battle.

In order to better understand the part which the infantry platoon plays in the attack let us take a birdseye view of the battle as a whole.

Every combat, whether on a large scale or a small scale, takes the form of the *attack of a position*. One combatant attacks the position and the other defends it. The position may be one which the defender has carefully selected and very thoroughly fortified, in which case the task of the attacker is very difficult. Or it may be any place in which the defender happens to find himself when attacked, and which he has had no chance to fortify. Such would be the case if two forces should unexpectedly meet each other. Between these two extremes there will be a great variety of situations. In any case the defender will fortify the ground he occupies to the extent that time and conditions allow.

The procedure of the attacker and defender is much the same in any case. The attacker's infantry advances against the defender's position and seeks to kill, capture or drive back the defender's infantry. The defender opposes this advance with the fire of all his weapons. If the attacker succeeds in penetrating or forcing his way into the position, the defender in turn attacks him with troops (reserves) which he has held for that purpose, and endeavors to throw him out.

Thus the attack consists essentially of the apparently simple act of forcing a way forward and occupying the ground formerly held by the defender. If the defender is unable to check this advance, but remains in his position his men will be killed or captured. If he withdraws before the attack he will also suffer heavy losses in his retreat, he will probably be pursued, and his troops may become greatly demoralized. Of course the real purpose of the attacker is to break down the resistance of the defender and not merely to occupy certain ground. But if he is consistently able to force his way forward and occupy the defender's positions this is proof of superior strength. Each time he is forced out the defender will lose men and material, and this if constantly repeated finally breaks down his resistance and forces him to surrender.

In our course in Musketry we have seen that the attacker must establish *fire superiority* to enable him to advance. That is he must beat down the fire of the defender by a superior fire of his own.

In this struggle for fire superiority the infantry platoons on both sides employ all their own weapons. In addition to this they are supported or aided by the auxiliary fire-arms of the higher units, including machine guns, 37 millimeter (one-pounder) guns, light mortars, and the artillery of the division or higher units, and sometimes tanks. Sometimes this fire support of the auxiliary arms may be so effective that the attacking infantry has little to do except to move steadily forward behind a protective wall or curtain of fire (barrage) established by the artillery. In other cases this fire support may be entirely lacking, and when this is so the attacking platoons must depend on their own weapons alone in the struggle for fire superiority. To be successful against a determined defense the attacking infantry must be thoroughly trained in rifle and automatic rifle marksmanship, individual movement and the use of cover, and in the tactics of fire and movement which we call Musketry. This training has been covered in the previous courses in this volume.

The leaders of the infantry rifle platoons have no control at all over the auxiliary fire weapons. They must be able to appreciate the situations in which the support

of these weapons is needed. They tell their next superior commanders of such situations, and furnish the information which the auxiliary weapons must have in order to apply their fire to good effect. The infantry platoon leaders must be able to recognize this fire support whenever it is given, and they must be skilful in taking advantage of it to move forward.

On the other hand the infantry platoons cannot fight the hostile artillery, which is beyond the range of their weapons. They can merely evade its fire as far as possible, by keeping concealed and taking up proper formations.

The artillery usually operates in accordance with a definite program, and it cannot change this program to meet the needs of one infantry platoon. The platoon leader should know the rate at which the artillery barrage is to advance, and he must keep close behind it to enjoy its protection. If he loses the barrage it cannot be readjusted to meet his needs.

The machine guns of the battalion are always under control of the battalion commander, and may be assigned by platoon to support the rifle companies in the attack. They are capable of powerful concentrations of fire against favorable targets, and their assistance can usually be promptly obtained when needed.

The howitzer weapons are a part of the infantry regiment but are often assigned to battalions in the attack. The chief function of these weapons is to attack machine guns which cannot be overcome by rifle fire alone. If the hostile machine gun can be seen it can be put out by a direct hit of the one-pounder. If it cannot be seen, but is known to lie within a small area defiladed from rifle fire it can usually be reached by a few shells from the light mortar. The light mortar may also be used to attack concentrations of hostile troops in areas which cannot be reached by rifle fire.

The platoon leader should be familiar with the powers of these weapons. He should know the kind of targets they can successfully attack. He should tell his company commander of such targets, furnishing the necessary information as to their location, etc. This may be done by tracer bullets, by a runner who knows the target, or by a sketch (see Scouting and Patrolling). And finally the platoon leader must be prompt to take advantage of the fire support as soon as it is given.

THE INFANTRY RIFLE PLATOON IN THE ATTACK.

Phases of the Attack.

The platoon usually engages in combat as part of a larger unit. That is the platoon fights as part of its company and the company as part of its battalion.

The attack usually divides itself into 3 phases, known as:

1. The approach march.
2. The entry into the attack.
3. The conduct of the attack.

1. *The approach march.* The attacker must advance to gain contact with the defender. Troops usually move in column because it is not possible to advance rapidly when they are deployed as skirmishers. So in approaching the battle front the troops remain in large columns on the main roads, as long as practicable.

As the approach march continues the front line battalions break up into company columns. The battalion commander divides his zone of action into company zones. For example he assigns two of his rifle companies to the attacking line and holds one rifle company in reserve in rear of the others.

In like manner the front line companies break up into platoons. Each front line company commander divides his company zone of action into platoon zones. For example he assigns two platoons to his attacking line and holds one in support.

It will be seen that in this approach march there is a successive breaking up of large columns into smaller ones, a gradual extension of front or partial deployment, an assignment of zones of action to front line battalions, companies and platoons, and a gradual placing of all infantry units and all auxiliary arms in their proper positions to play their parts in the coming attack.

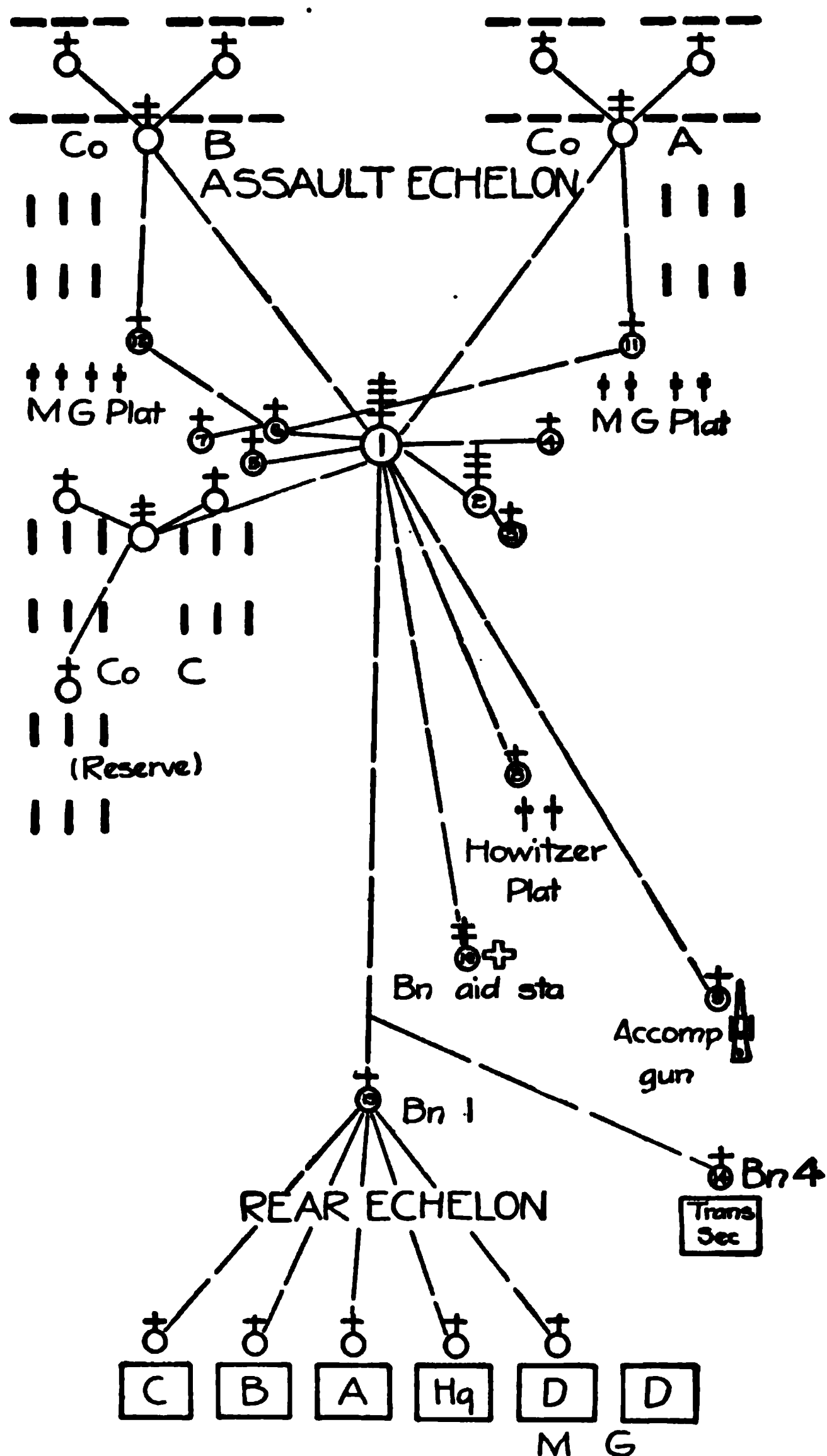


PLATE 361.—Infantry Battalion Deployed for Attack.

1. Battalion Commander.
2. Executive Officer.
3. Battalion Plans and Operations Officer, Bn 3.
4. Battalion Intelligence officer, Bn 2, and Intelligence personnel.
5. Battalion Communications officer and Communications personnel.
- 6, 7. Commanding Officer and Reconnaissance Officer, MG Co (D).
8. Attached platoon, Regimental Howitzer Co.
9. Accompanying gun from Divisional Artillery.
10. Bn Aid Station and Medical Personnel.
- 11, 12. Platoon leaders, MG Co.
13. Battalion Adjutant, Bn 1.
14. Battalion Supply officer, Bn 4, Commanding Transportation Section.

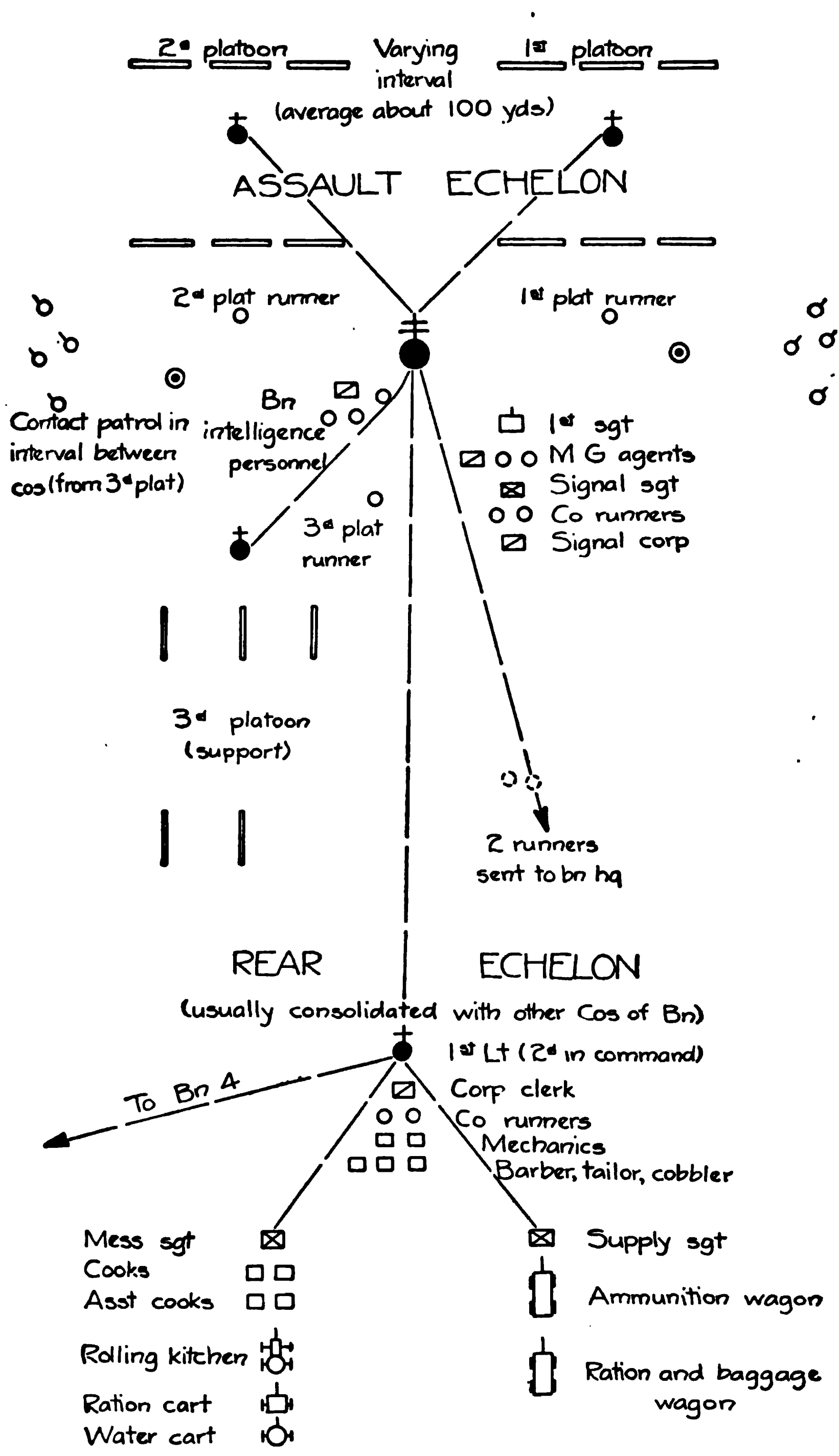


PLATE 362.—Rifle Company Deployed for Attack.
(Field trains usually consolidated by regiment during combat.)

2. *The entry into the attack.* When the assault units, partially deployed as we have seen, reach the position selected for launching the attack, they halt, the necessary orders are given and the attack is launched, usually at a stated time. Sometimes no position for launching the attack is selected in advance. The necessary orders are issued during the approach march, and the attack opens automatically as soon as the enemy is encountered.

3. *The conduct of the attack.* This includes the advance of the attacker's infantry against the defender's position, the tactics of fire and movement. It usually culminates in an assault on the enemy's position, followed by reorganization of the platoon, and measures necessary to hold the ground won, against counter attack by the defender.

The characteristic deployments of the battalion and company in attack are shown in Plates 361 and 362. The deployment of the platoon is shown in detail in Plates 364 and 365. (See also Musketry.)

We will now consider in detail the operations of the rifle platoon, and the duties of the leader in each of the three characteristic phases of the attack.

APPROACH MARCH OF THE PLATOON.

The mission of the platoon leader in this phase of the combat, is to bring an organized and controlled unit, intact, at the proper time, to the exact place at which it is to enter the fire fight.

The orders of the company commander will give him certain aids and impose certain restrictions for his guidance. The company commander will designate a base platoon to guide the movement, prescribe intervals and distances, the direction and rate of advance, giving to each platoon its (at least approximate) zone of action.

Problems of the Platoon Leader.

In the usual case, to properly perform his mission at this stage, the leader of the rifle platoon must solve six problems, to-wit:

1. To place his platoon in the proper formation at each stage of the advance.
2. To maintain the proper direction of advance.
3. To regulate the rate of advance.
4. To maintain necessary contact during the advance.
5. To provide for reconnaissance of the terrain traversed.
6. To provide for the security of the platoon during the advance.

The principles which must guide the platoon leader in solving these problems are simple and definite. It is with their practical application that we are now especially concerned. Let us see exactly how the platoon leader solves each of these problems.

1. *Proper formation.* The formation must be simple, flexible, easily assumed or changed by means of simple orders and the authorized commands and signals of the drill regulations.

The two extremes of platoon formations in the approach march are:

- a. Platoon in a single column of squads (route formation).
- b. Platoon in two waves of squad columns (or skirmishers), one behind the other, covering a front of 120 to 200 yards or more; the first wave preceded by scouts; distances between scouts and first wave, 150 to 500 yards, distance between first and second waves, 100 to 200 yards. Each wave would consist of a section.

In formation (a) each section remains intact, in close order, with the section leader immediately in front and section guide immediately in rear.

The following simple orders and commands might be issued by a platoon leader to establish his initial dispositions:

"The enemy is in position beyond that ridge. We advance to the ridge. Direction point, that house on the skyline (pointing it out). Scouts of the 1st section will precede the platoon by 250 yards, diamond formation, Jones in charge."

The drill regulations command, "Scouts out," will initiate the movement. An order to the platoon sergeant, "Follow me with the platoon at 50 yards," will regulate distances.

2.

Contact patrol
 interval between
 cos (from 3rd plat,

3.

6.

To Bn

Mess sgt
 Cooks
 Asst cooks
 Rolling kitch
 Ration cart
 Water cart
 PLATE
 (Field trains

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 act of you observe
 of runner (one
 name, observe 1

as platoon during
 of the terrain of
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 signal. "Section comm

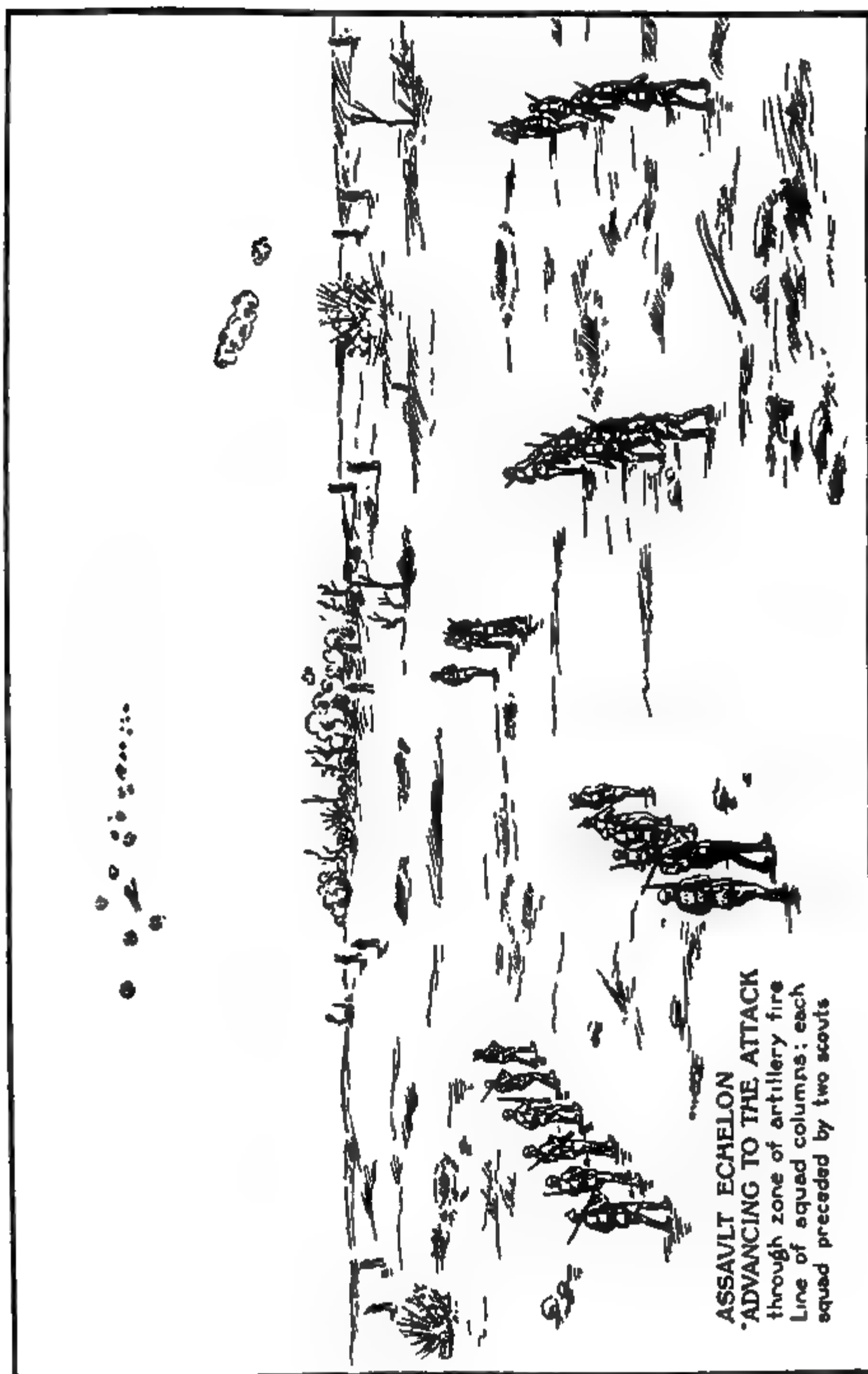
one section always
 gives this message
 between sections to 150 yds
 platoon leader maintains
 lay off this direction
 the terrain, then direct
 intervals during his advance
 indication of his direction
 within his assigned zone
 hundred yards to the right or left
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 the bearing or azimuth of
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ASSAULT ECHELON
ADVANCING TO THE ATTACK
through zone of artillery fire
Line of squad columns; each
squad preceded by two scouts

The platoon leader would provide for contact at this time by ordering, "Black and White (runners), follow the scouts at 100 yards. Each of you observe to one flank, keep the adjacent platoons in view." The remaining runner (one runner is with the company commander) would, as a matter of routine, observe to the rear, keeping the platoon sergeant constantly in view.

The platoon leader must regulate the formations of his platoon during the advance, as the requirements of security, contact, the nature of the terrain or the conduct of the enemy dictate. This he does by means of the authorized commands and signals, as far as possible, and by simple orders, transmitted by runner.

Thus as the platoon moves across country the leader may wish to reduce its front so that it can pass up a valley or stream bed. A simple signal, "Section columns," will accomplish this.

As the terrain becomes diversified he may wish to keep one section always under cover while the other is crossing exposed terrain. He gives this message to his runner: "To platoon sergeant—increase distance between sections to 150 yards."

2. *Maintaining the direction of advance.* The platoon leader maintains the direction of advance by the use of his compass. If he can lay off this direction on a map he will be able to note the prominent features of the terrain, their directions and distances from the localities he will occupy at intervals during his advance. This will afford him a continual check or means of verification of his direction and lateral position. He can tell whether he is moving within his assigned zone of action, or parallel to it at a distance of one or two hundred yards to the right or left.

Having determined his own position and drawn his direction line, he holds his compass to his eye and turns until the compass reads the bearing or azimuth of his direction of advance. He then picks out the most distant distinct feature of the terrain (lone tree, house on skyline, etc.) which is on his line of advance. This will be his guide or direction point. He verifies its position on the map if possible.

The direction is best maintained when it is effected "by bounds." To do this the platoon leader from one covered position (for example, a good reverse slope), selects the next available cover on his route (for example, a small wood). He verifies the direction with his compass, and selects one or more prominent features of the terrain as guiding points. These should be visible from all points on the line of march between the two covered positions. He points out these direction points to his scouts and his base squad, and sees that they march on them. For the next bound the procedure is repeated, a new direction point being selected if necessary. If a distant point which is on the right line can be chosen, it may serve as a guide for several bounds.

A base squad is designated as a guide for the march of the platoon (when deployed), for the same reasons that a base platoon is designated for the company.

If it be necessary for the platoon to leave its line of march in order to avoid a danger area, the platoon leader should select some suitable point in advance and on his direction line, returning directly to it as soon as the detour is completed.

3. *Regulating the rate of the advance.* The platoon leader regulates the rate of advance by causing his base squad to guide on the base platoon, and by requiring the other squads of his platoon to guide on the base squad.

The platoon leader may cause the base squad to guide on him. He may also regulate the rate of both scouts and base squad by occasionally signaling, "Halt." and "Forward."

4. *Maintaining contact during the advance.* First, contact must be maintained within the platoon.

- a. Between the leader and the scouts.
- b. Between the leader and the runners.
- c. Between the leader and his subordinate leaders.
- d. Between the section leaders and the squad leaders under them.
- e. Between the (platoon) leader and the base squad.
- f. Between the base squad and the other squads.

Second, contact must be maintained within the company.

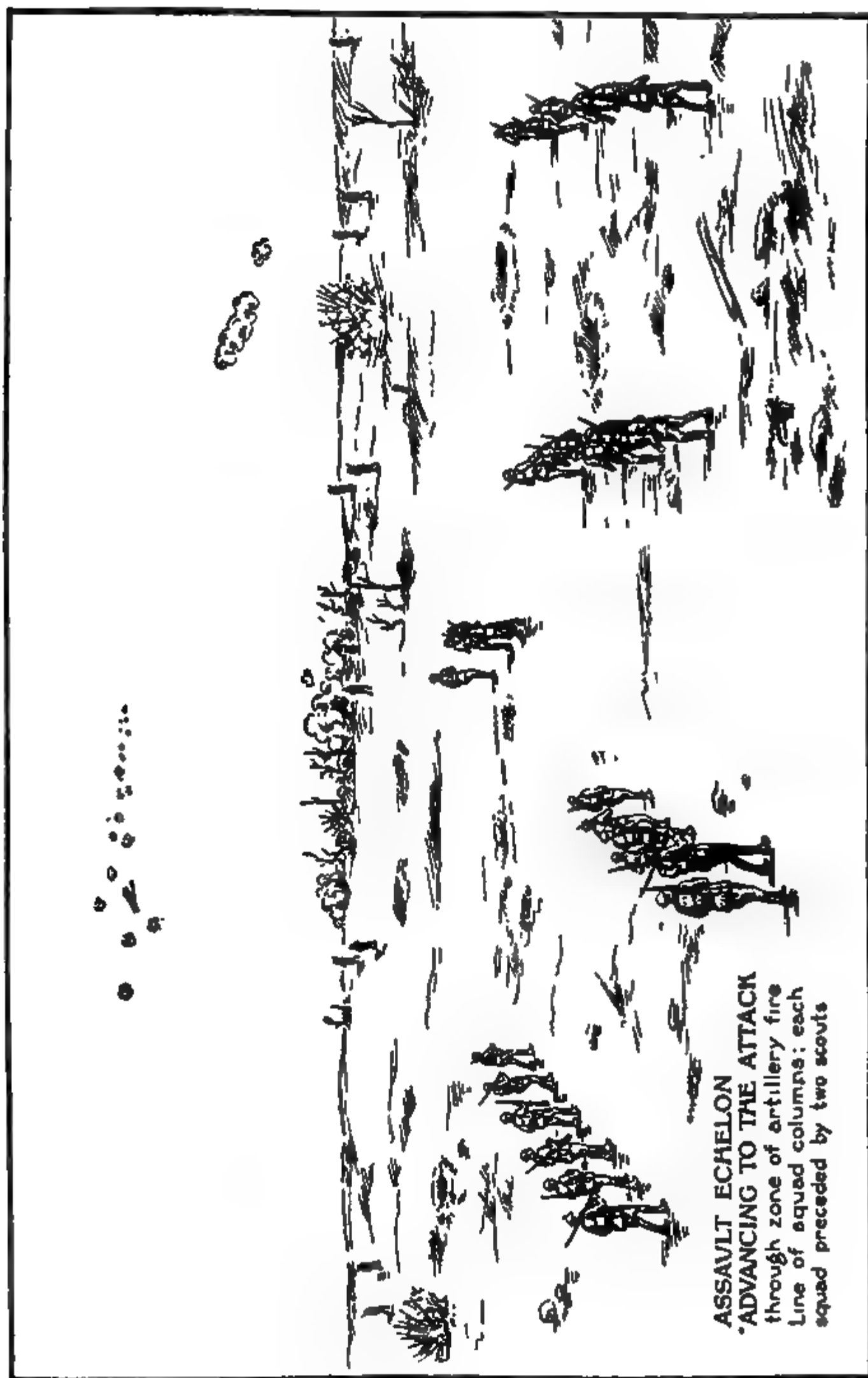


PLATE 363.

a. With the company headquarters.

b. With other platoons of the company in the same echelon.

Contact should be maintained with platoons on both flanks, whether or not they belong to the same company.

The platoon leader can ordinarily maintain contact with the units on his flanks by observation. He uses his runners for this purpose. As a matter of routine one observes the unit on the right, another the unit on the left.

The leader moves in advance of his platoon, close enough to his scouts to have visual (sometimes verbal) contact with them, when practicable. He uses his runners as connecting files between himself and the scouts to the front or flanks.

While in this position the leader insures contact with his platoon by:

1. Placing the platoon sergeant (second in command) in such a position that he can supervise the movements of all elements. Generally this position will be between the two sections.

2. By charging one of his runners near him, with constant observation to the rear, and constant visual contact with the platoon sergeant.

The platoon runners, when used to maintain contact, must never be beyond range of verbal communication with the platoon leader (hailing distance).

The platoon leader maintains contact with the company by sending one of his four runners to the company headquarters as an agent of communication between the company commander and himself.

Contact within the platoon is also facilitated by the designation of a base squad. The leader supervises the deployment of the platoon on the base squad, prescribing intervals and distances. Thereafter he closes and extends these intervals as the nature of the terrain and the conduct of the enemy require, always providing for a complete chain of visual (and as far as possible, verbal) contact between himself and all parts of the platoon, and between parts.

Contact is largely a matter of suitable formations and of maintaining the proper direction and rate of advance.

5. *Reconnaissance of the terrain.* The leader himself should make constant personal reconnaissance. Accordingly, he should always be well to the front, as that is where information usually comes from. It is well that he should be able to see what the scouts see. From the available vantage points he scrutinizes the country ahead, using his glasses. As soon as his scouts have found any advanced position safe, the platoon leader promptly moves forward to it, utilizing such cover as is available while moving. During the approach march the leader usually is in front of his platoon.

The leader also provides for reconnaissance (for purposes of security and information) by the use of his scouts. Usually the scouts of the leading section, which will be the initial fire unit on entering the combat, will cover the front of the platoon. Each pair of scouts covers the front of the squad to which they belong, usually about 40 to 50 yards. Thus each pair of scouts constitutes a miniature advance guard or point. Like other advance guards, it is their duty at the opening of the fire fight to seize a favorable firing position to which the other elements can advance, to mark this position for the troops which follow (the squad), to determine the enemy's location, and to convey this information back to the troops by means of tracer bullets, or otherwise. (See Musketry.)

For reconnaissance to the flanks the platoon leader uses his runners. This reconnaissance is local and limited. Units on the flanks make extended reconnaissance unnecessary, provided proper contact is being maintained. If the platoon be on the flank of a line, or if contact with an adjacent unit has been lost, the company commander will cover the flank with patrols from the support platoon. If this be not done, the platoon leader may send out a patrol from his rear section, usually the scouts.

As a rule, contact with the next unit is all that is necessary in the way of flank reconnaissance. The platoon leader's chief concern is reconnaissance to the front. This is mostly a matter of personal observation and control of his scouts.

Efficient reconnaissance calls for special training. The scouts of the platoon should be specially trained, and the platoon leader should use them to the fullest possible extent in reconnaissance.

6. *Security during the advance.* Reconnaissance measures provide for both information and security. The platoon leader further provides for the security of his platoon during the advance, by making full use of any available cover, by adopting suitable formations, and by maintaining proper contact.

In the advance by bounds, heretofore referred to, the platoon moves promptly from one covered position to the next. Before leaving any such position the next in advance should be carefully reconnoitered and usually occupied by the scouts. The leader selects the best available covered route for the bound, and adopts the formation best suited to utilize this available cover.

The leader and his scouts make careful and systematic reconnaissance to locate all danger areas on the line of advance, localities subject to hostile artillery fire, gassed hollows or woods, etc. The leader changes the direction of march to avoid such areas, or gives timely warnings concerning them to insure the necessary precautions (gas masks ready to put on, etc.).

In passing through a locality where shells are falling the platoon is deployed in lines of squad columns, with such intervals and distances that a single shell burst cannot involve more than one squad.

Security requires personal reconnaissance by the leader, quick estimates of the situation in emergencies, and clear and definite orders controlling the formations and actions of the platoon.

ENTRY INTO THE ATTACK.

Orders of the company commander. The rifle company commander, upon receiving the attack order of the battalion, makes his own estimate of the situation, formulates a plan of attack for his company, and issues an initial attack order to his platoon leaders. Usually this order will be issued verbally at the most advanced position it is possible to reach before launching the attack.

The company attack order will include:

1. All necessary available information of the enemy and our own troops.
2. *a.* The general plan of attack.
b. The combat mission of the company.
c. Time of attack.
d. Direction of attack.
e. Line of departure.
f. Limits of company zone of action.
g. Supporting weapons, such as machine guns or light mortars, if any.
3. *a.* Definite combat missions of each platoon.
b. Zone of action of each assault platoon.
c. Initial position of support platoon and such directions governing its movements as are practicable.
4. Administrative details.
a. Initial location of battalion aid station.
b. Instructions concerning evacuation of prisoners.

NOTE.—Administrative details in a company attack order would usually be limited to the above, as the platoon leaders have little to do with administration during the fire fight. They are not responsible for ammunition supply or the evacuation of the wounded.

5. Location of company command post.

NOTE.—The company command post is the position of the company commander. The 1st sergeant is the company message center, but as he accompanies the commander in combat the message center will be at the command post.

The platoon leaders take notes as the company commander issues his orders. Usually the platoon leader will be quite familiar with the general situation and with what is known concerning the enemy and his own forces. He will of course note anything new. He is particularly concerned with and should carefully note those

**ASSAULT PLATOON
ADVANCING TO ATTACK.**

Open warfare in diversified terrain.
No barrage. First section as skirmishers,
second section line of squad columns.

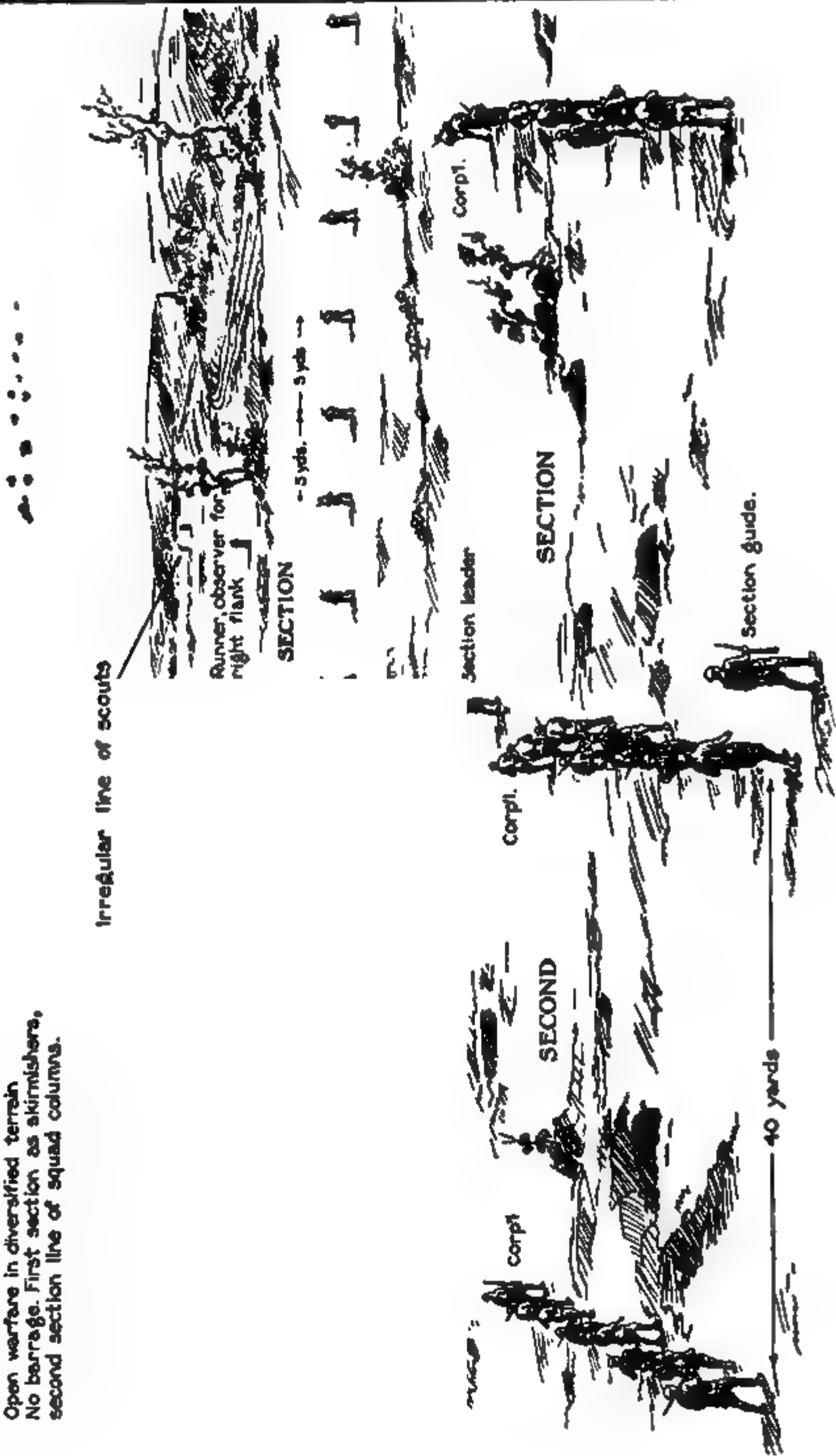


PLATE 364.

portions of the order which definitely prescribe his own mission and the time and place for carrying it out. He should carefully examine his map, make sure that he identifies all localities, distances and directions referred to, and question the company commander on any matters that are not perfectly understood.

The mission of the platoon leader in this phase of the combat is to lead his command into the fire fight.

The orders of the company commander will give him certain information concerning the enemy and supporting troops, and will impose certain limitations as to time and space, for his guidance.

Problems of the Platoon Leader.

In the achievement of his mission the platoon leader will now be confronted with certain definite problems, as follows:

1. To determine how each element of his platoon will be used to carry out his plans, and to decide upon the dispositions of these elements on entering the fight.

2. To determine, that is, to foresee and regulate if practicable, the position from which the attack will be launched.

3. To determine, that is, to foresee and regulate if practicable, the time at which the attack will be launched.

The attack order of the company may prescribe the time and place of the attack. It will always prescribe the zone of action or front to be covered by the platoon, and may contain certain provisions as to the dispositions of the elements of the platoon. On the other hand, the time and place at which the attack will open may be determined by the action of the enemy. It is for this reason that the platoon should be placed at least approximately in its zone of action, during the approach march.

The platoon leader's solution of the problems that confront him takes the form of a plan of attack. This plan is the result of a careful estimate of the situation, and is the basis for the attack order which the platoon leader issues to his own subordinates.

The mission. As a basis for his plan the platoon leader must first "estimate his situation" in the usual manner. The first consideration is his *mission*. If this is perfectly clear to him he should be able to state it clearly and definitely. This he should do, either to himself or to his platoon sergeant, thus: "The mission of this platoon is to advance at 6 AM, S. 45° E., on a front of 200 yards, the right of the platoon on the line B. M. 51—farmhouse 750 yards SE." This definite statement will serve to fix his mission in his mind and prevent his being led astray by the confusion of subsequent events.

It is always difficult and frequently impossible to send orders to the leader of an assault platoon during the fire fight. He is left largely to his own resources and his mission must be the guide for his conduct. Before adopting any suggested line of procedure, he should ask himself, "Will this help me to achieve my mission?" Usually his mission will be embodied in the orders of his company commander, but as we have seen, orders cannot provide for an indefinite period. Situations may and will arise in which previous orders cannot be carried out, or to which they are not applicable. In such situations the platoon leader must remember that his platoon is part of a great organization, a team. The mission of this organization is victory, and in a large sense the mission of every component platoon, which remains unaltered whatever the situation, is to do all in its power to contribute to that victory. In a situation in which orders can no longer guide him the platoon leader should say to himself: "My company commander could not possibly have foreseen all that might happen to this platoon when he launched it into the attack. What can I do now to help myself or my neighbors? What orders would my commander give if he were here and could see this situation as I now see it?"

The enemy. His mission being plain, the platoon leader must next consider the enemy. The enemy with whom he is chiefly concerned is within his own zone of action. But machine gun and other hostile fire coming from other localities may also be encountered. Where will the enemy be found, and when? What will be his

strength? What weapons will he have? What will be his defensive organization? Will he probably have a few men only, in his advanced lines, or will they be held in strength? His knowledge of the general situation and of the habits of the enemy will serve to guide the platoon leader. Is the enemy retreating? Or has he been in this position long? If the latter, he may be counted upon to have fortified it.

His own troops. The platoon leader also considers his own troops, especially the support that he may expect from them. Are there elements on his flanks which will afford him protection against elements of the enemy outside of the platoon's zone of action? What assistance may he expect in the way of machine gun, light howitzer or artillery fire? Will the supports of his company cover his flanks, and assist him in case his advance is held up by hostile fire?

Terrain. The platoon leader next considers the terrain. What portion of the terrain is assigned as his zone of action? Are its limits definite and can he recognize them on the ground itself by means of plainly visible features such as buildings, roads, streams, etc.? What problems does the terrain present? The platoon leader must consider the effect of the terrain both upon himself and upon the enemy. Is it level and open and therefore difficult to cross in the face of fire, or does it afford concealment or cover, or both? Does it afford the enemy a good view and opportunity for long range fire or is he restricted in this way? If the ground is rolling are the reverse slopes steep enough to be defiladed from machine gun fire? Are there any serious obstacles to be passed, such as marshy ground? What fire positions are available and how may they be reached under cover? The weather and season also exercise an influence. Is the ground frozen or covered with snow? (It is very difficult to intrench in frozen ground.) What is the state of the crops? Standing crops afford excellent concealment.

Other conditions. Any other conditions of any kind, either favorable or unfavorable, which have a real bearing on his problem, should be considered by the leader.

Courses of action open. Plan. From this careful consideration of *what* he has to do, what there is to interfere with his doing it, and what aids he may expect, the platoon leader will evolve several possible schemes for carrying out his mission. These he carefully compares in his mind, weighing their relative advantages and disadvantages, and finally selects one of them as giving the greatest promise of success. This will be his plan of action.

The possible plans of action for an infantry platoon with a definite attack mission, are few in number. They depend on a few basic principles:

1. To attack means to move forward.
2. The immediate object of movement is to gain a position which permits the development of more effective fire.

The ultimate object of movement is to gain a position from which an assault may be launched against the enemy.

3. Unless his movements are masked by cover, darkness, fog, etc., the attacker must gain fire superiority before he is able to advance without ruinous losses. Fire superiority having been established, must be maintained throughout the forward movement.

A consideration of these principles will show that the plan of the platoon leader must provide for:

1. The use of available cover, combined with rapid and skilful movement, in gaining an initial position in which fire superiority may be established.

2. Progressive movement forward from one fire position to another, which either permits more effective fire or is an intermediate step in the advance to the assault position. For example: It is not always possible to move directly from one good fire position to a better. The attacker may be compelled to leave an excellent fire position where he is well covered, to advance to a more exposed and less favorable position to the front. Because the sole purpose of fire superiority is to make forward movement possible. The attacker, having established fire superiority in any position, must take advantage of the opportunity thus afforded to continue his advance, even though this may temporarily place him in a less favorable position.

Victory cannot be won by fire alone. Also the attacker seeks ultimately to gain a position from which he may launch his assault. Any intermediate position, however favorable for the delivery of fire, is merely a step in the progress toward the assault position.

3. Covering each forward movement by sufficient fire to maintain fire superiority. Except at very close range the weapons of the platoon cannot be effectively employed when in motion. Therefore it is necessary that portions of the platoon remain in the fire position to cover the forward movement of other portions. The extent of the fire superiority over the enemy will determine how large a proportion of the platoon may cease firing and advance. It may be a section, a squad, or only individuals, one by one. The movement may be a single rush from one position to the next, or a more deliberate individual movement, taking advantage of existing cover (infiltration).

4. As the most advantageous positions from which to deliver fire or launch an assault will usually be on a flank of the enemy's position, the plan should provide for placing elements of the platoon in such positions when practicable. Movements to such positions must take advantage of any cover afforded by the terrain, and of fire superiority established by other elements.

This typical procedure may of course be varied to some extent to meet emergencies which may arise.

The practicable plans for a platoon attack may usually be classed as three:

1. A continuous frontal advance, without halting for the purpose of delivering fire. Such a movement is possible when covered by a rolling barrage of artillery fire, or tanks, or when the natural cover is exceptionally good or the enemy's fire particularly weak and ineffective.

2. To immobilize the enemy, or pin him to his position, by a frontal attack, while employing the rear wave in maneuvers on one or (exceptionally) both flanks, with a view to gaining positions favorable for oblique or flanking fire or for assault. This will be the characteristic procedure in mobile warfare.

3. (When plan 2 is impracticable by reason of the terrain and the nature of the enemy's dispositions.) A frontal advance by alternate fire and movement, rushes of fractions of the line or infiltration of individuals, building up successive firing lines closer and closer to the enemy.

All of these three typical plans will ordinarily conclude with an assault or charge upon the enemy.

The leader must decide, at the opening of the action, and at various times during its progress, what plan will best meet the situation which confronts him.

Orders. Having determined upon his initial plan for launching the attack, and considered the various emergencies that may arise, the platoon leader issues a clear and definite, but brief, verbal order to his platoon. Subsequent orders, during the progress of the combat will, as has been pointed out, be fragmentary—that is, issued from time to time to meet each new situation as it arises.

In his initial attack order the leader should give to his subordinates, usually to the entire platoon, if practicable, all information concerning the enemy and supporting troops which is necessary for their guidance. This order will conform to the usual five paragraph form, about as follows: (The paragraphs, of course, are not numbered in a verbal order.)

1. Information concerning the enemy and supporting troops.
2. *a.* General plan of attack. Specifically the combat mission of the company.
b. Platoon plan of action, including its combat mission, time and direction of attack, line of departure, and zone of action.
3. *a.* Initial dispositions (deployment) of the platoon.
b. Special instructions to elements—if any.
4. *a.* Location of battalion aid station.
b. Instructions as to disposition of prisoners.
5. Place of the platoon leader.

CONDUCT OF THE ATTACK.

After the assault platoons of the rifle company enter the zone of effective small arms fire, the control of their actions by company or higher commanders is very limited. The base platoon ceases to be the guide for the company's advance. Each platoon leader within his zone of action fights his own platoon so as to best accomplish his mission. The battle becomes a platoon leader's fight.

The mission of the platoon leader in this phase of the attack is to skilfully combine fire and movement, utilizing every advantage the terrain affords, to reach the enemy's position, kill, capture or drive him from it, and hold the ground gained.

Problems of the Platoon Leader.

In the achievement of this mission the leader, during the course of the combat, must solve certain problems. These will ordinarily include:

1. Maintaining the direction of attack.
2. Reconnaissance.
3. Locating the target and applying to it the fire of the platoon.
4. Supervising and directing the fire and movement of the platoon.
5. Providing for contact and intercommunication.
6. Determining when, where and how to employ the support section.
7. Determining when, where and how to assault the enemy's position. (In most cases the platoon leader will lead the assault in person.)
8. Reorganizing the platoon promptly after the assault, in order to be ready to resume the advance, or to hold the ground gained.
9. Security.
10. Assisting neighboring units (on the flanks).
11. Keeping the next superior commander advised of the situation of the platoon.

In solving these problems the platoon leader will, as in all other cases, estimate each situation, form a plan of action, and issue the orders necessary to carry out this plan. In the operations of the platoon, situations arise suddenly and often unexpectedly. The leader must meet each emergency with appropriate orders.

Maintaining the direction of attack. This is done as described under the approach march. It is always better to assign a definite guiding point rather than a compass direction, thus: "The 2nd (base) squad, will move directly towards that farm."

Reconnaissance. The information derived from constant reconnaissance is the platoon leader's guide in every phase of the combat. This reconnaissance must be *personal*. In moving forward within the zone of small arms fire (as well as in the approach march) the leader should be at all times near the head of his platoon. Except when following a rolling barrage the platoon will usually be preceded by its scouts.

Conduct of the platoon scouts. The scouts move in front of the assault wave at such a distance (depending on the terrain) as to insure that the platoon will not walk blindly into an ambush, especially of hostile machine gun fire, which even at a considerable range can pin the platoon to the ground so that it can neither advance nor maneuver.

The scouts do not walk boldly forward in plain view. They should screen themselves by a skilful combination of movement and the use of cover. This steady advance, affording the enemy only an occasional glimpse of their movements, will often induce him to open fire, and thus disclose his position.

There are two scouts to each squad, and they habitually work as a team. They should be "buddies," having friendship for and perfect confidence in each other.

The scouts pick out the localities where enemy groups are apt to be located, and utilize natural cover to conceal themselves as far as possible from view from such localities. The enemy will post snipers to pick off the scouts and officers. If their advance is not skilfully conducted the scouts will not only fail to accomplish their mission, but will lose their lives as well.

The scouts watch continually for signs of the enemy in these likely places. One scout watches the danger areas while the other moves forward. The platoon is not permitted to move into an open space until the localities from which fire might be directed upon such an area have been reconnoitered by the scouts.

The platoon leader follows his scouts and closely observes their conduct, watching for their signals. The actions of the scouts, the simple signals (halt, forward, and enemy in sight), and the use by them of tracer ammunition, will convey to the platoon leader most of the information they gather. When necessary one scout of a pair will carry a message back.

Locating the target and applying fire. If the enemy opens fire the scouts halt, take cover, and endeavor to locate the points from which the fire comes. They work their way forward to a favorable position for observation and open fire with tracer bullets, thus indicating the enemy's position.

The scouts of each squad, in taking a position favorable for the development of fire, will cover a front approximately equal to the deployed frontage of the squad. As the rest of the squad reaches the firing position the scouts point out to them the location of the target.

In order to apply fire to the target as promptly as possible the platoon leader must select the firing position and determine how to reach it.

If there be no scouts out and fire is suddenly opened on the platoon, the men drop to the ground, take cover, locate the target and open fire. A signal of the range, indication of the position of the target, and the signal to open fire, will usually be the only orders possible in this case. As a rule the section leaders and the men will know where the target is as well as the platoon leader—the enemy himself having indicated the position by opening fire.

When the scouts are in front and a situation develops, the platoon leader must decide whether he will occupy the position held by the scouts or whether he will commence the fire action from a locality farther to the rear. The questions in this case are whether the position held by the scouts is a good initial fire position, and whether the leading section can probably reach it under cover of the terrain and the fire of the scouts. If the answer to either be no, it will be necessary to establish fire superiority from some position in rear before advancing.

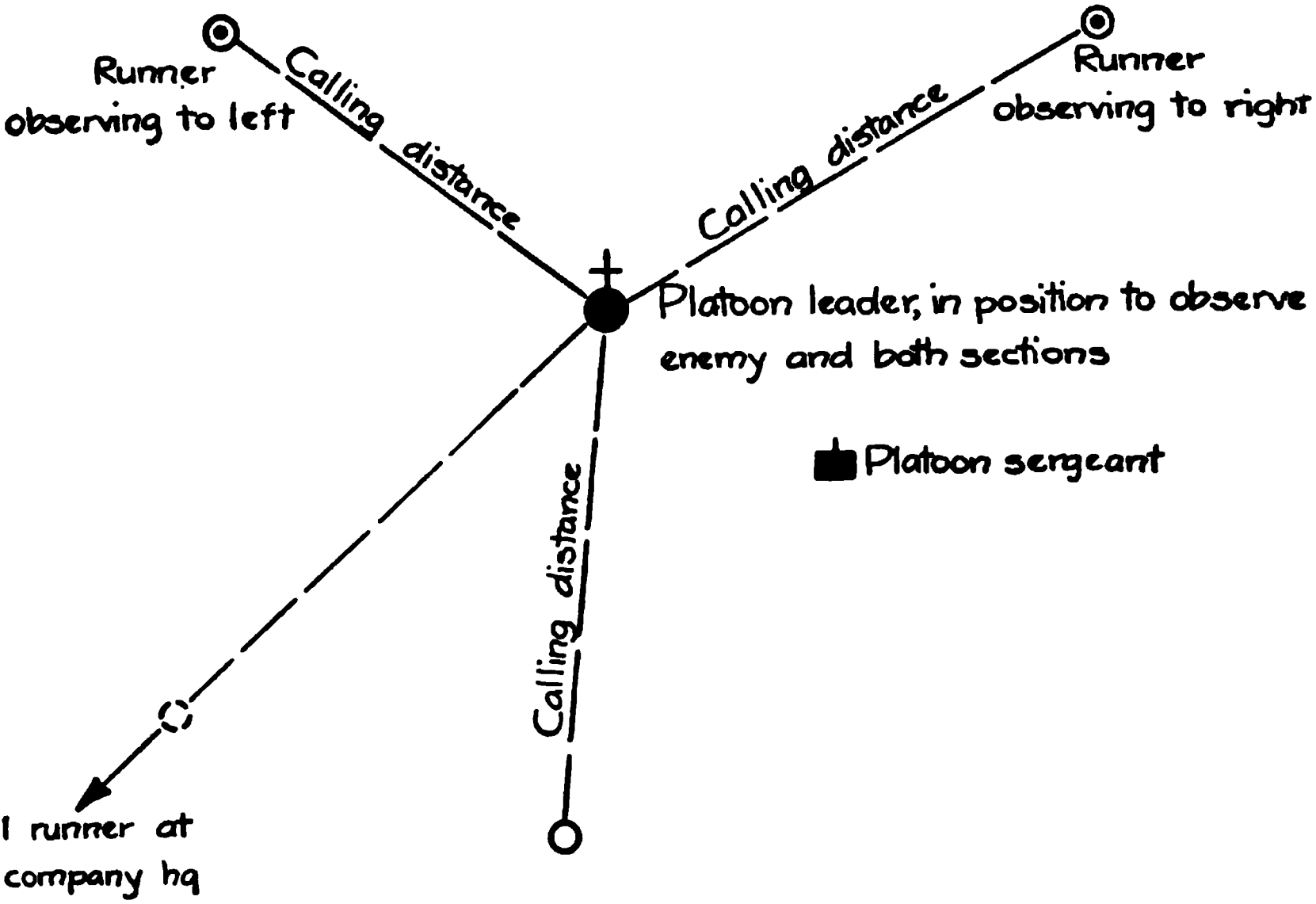
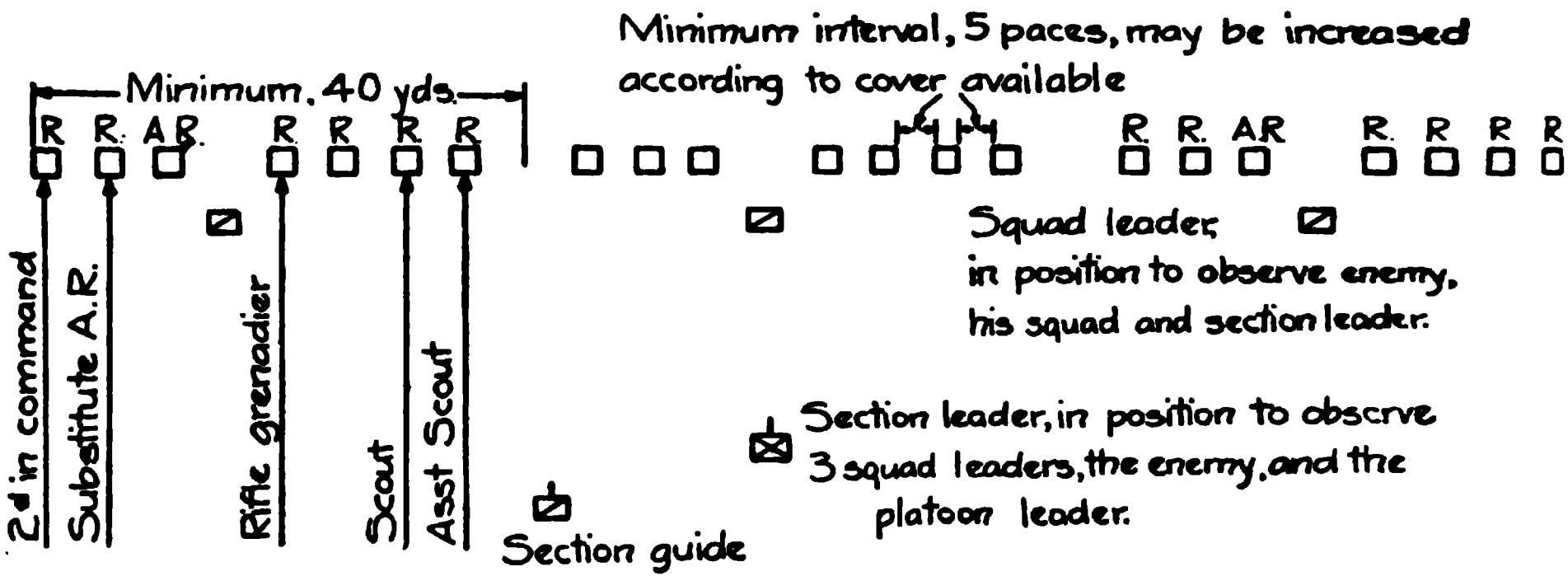
If the line of the scouts is to be occupied the platoon leader might order the leader of the 1st (or leading) section: "On the line of scouts, RE-FORM," indicating the line. He may also give him the location of the target and the range, if these are known to him. As the scouts will be firing, the section will open fire upon arriving on the line, or in case they advance as individuals each will open fire on his arrival on the line, thus gradually building up covering fire for the remainder of the section. If the platoon leader has not designated the target, this will be pointed out by the scouts as the section forms up abreast of them. If the section leader is not within speaking distance of the platoon leader, the latter's signal, "Forward," pointing to the line of scouts, will usually be sufficient. It may be possible for the platoon leader to call the section leader, and give him such orders as necessary. These orders might be as follows: "On line of scouts reform, range, 600 yards (meaning from the fire position). Position outlined by tracers, extending from stone house to fence on right. Questions? Move out." The platoon leader may also cause a member of his headquarters (a runner) to outline the target with tracer bullets.

Ordinarily the manner of moving forward to the position will be left to the judgment of the section leader. If the platoon leader considers it necessary to prescribe this he may order (or signal), "By squad (or section) rush, on line of scouts, reform," or "By infiltration, on line of scouts, reform."

If the position occupied by the scouts is not a good fire position for the section, or if the volume of the enemy's fire or the lack of cover indicates an improbability of the section being able to reach the position, the platoon leader must have fire opened over the heads of the scouts from the position occupied by the section, or one which it will be able to reach.

The scouts must be trained to take cover so as to permit fire over their heads without danger to themselves.

ASSAULT WAVE



SUPPORT WAVE

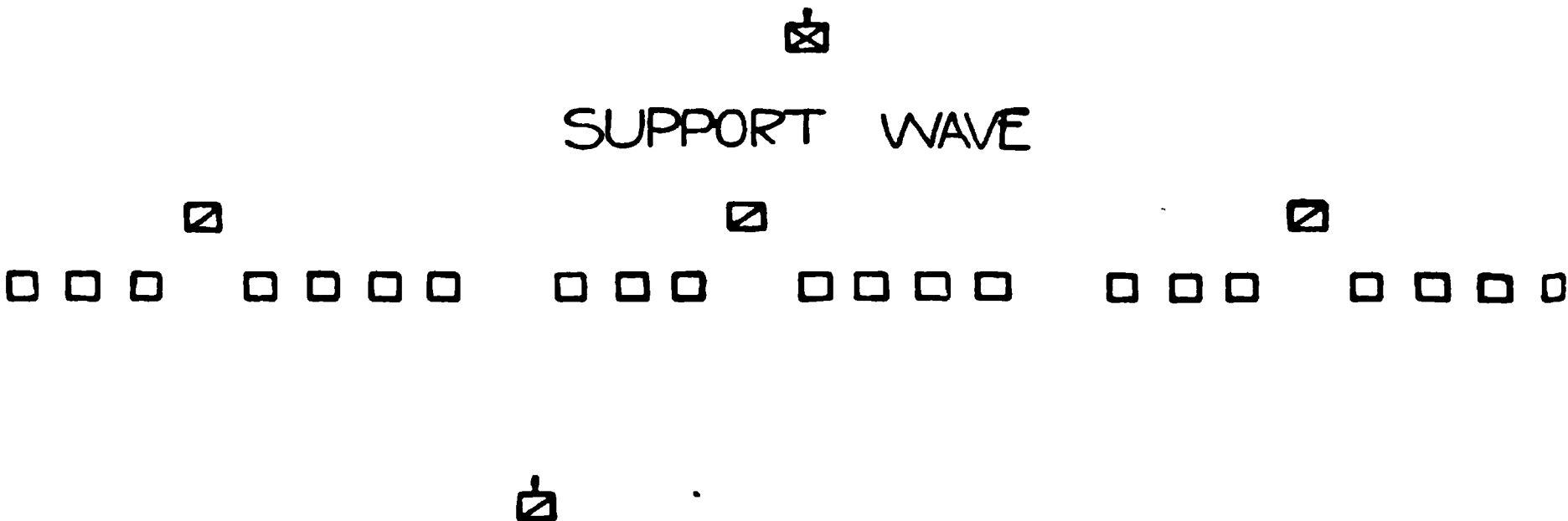


PLATE 365.—Rifle Platoon Deployed for Attack.

Supervision and direction of fire and movement. Having initiated the fire fight the platoon leader supervises the subsequent fire and movement of the platoon. To do this he occupies a command post from which he can observe:

- a. The enemy.
- b. The leading section.
 1. To insure its correct application of fire.
 2. To regulate its movements, if necessary.
- c. The rear section.
 1. To see that it occupies the best available cover at a proper distance in rear of the leading section, up to the time that it becomes necessary to employ it.
- d. The units on his flanks.

He moves his command post whenever necessary.

The leader should note the effects of the fire of both the enemy and his own command, and be able to sense when he has such fire superiority as to justify an advance.

The action having opened, the leading section should advance as rapidly as possible, without waiting for the organizations on its flanks. If the platoon leader believes that the section is able to move forward and the section leader does not move, he will order him to do so.

The order may be simply, "Forward," or it may direct the section leader where and how to move, as "To that ridge. Advance by squad rushes."

Employment of the support section. Another situation will be presented when it becomes apparent that the 1st section cannot advance, because of lack of fire superiority. This may be apparent at the outset or may develop at a later stage. The problem presented to the platoon leader is to decide when, where and how he can best employ his support section to forward the movement of the platoon.

Having decided that it is necessary to employ the support section, the leader will usually seek means for enveloping the enemy's position, as this will ordinarily be the most effective manner of employing the section. He studies the terrain to find a favorable position from which the section can apply its fire to the target to good advantage, usually from the flank or obliquely, and thus assist the leading section in gaining fire superiority and advancing. It is desirable also that this position be one from which an assault is practicable, or from which an assault position may be reached. The platoon leader also decides upon the best covered route to the position selected.

The orders to carry out the plan decided upon are best issued verbally to the section leader. For example: "Enemy infantry fire from the farm and machine gun fire from the woods are holding up the advance of our 1st section. It will continue to fire from its present position. Lead the 2nd section up that draw (pointing), find a good position near the head of it, and attack the farm with fire. When A Co. (on the right) has put out the machine guns in the woods (pointing), we will advance on the farm. Questions? Move fast."

If it is not practicable to give the orders direct to the section leader, they may be given to the platoon sergeant, who will ordinarily be with the platoon leader after the fire fight has opened. The platoon sergeant will then direct the operations of the 2nd section. He will not lead it in person. He will be able, however, to transmit and explain the order of the platoon leader better than a runner. If it be necessary to send a runner, care should be taken that he thoroughly understands the message. The platoon leader will point out the localities he refers to, and will cause the runner to repeat the message.

It is not the duty of the platoon leader to personally command a section during the fire fight. He is responsible for the leading of his entire platoon, and he does it by directing and supervising the operations of the two sections.

Upon receiving the foregoing orders the leader of the support section will ordinarily designate 4 to 6 scouts, under a leader, to precede the section and reconnoiter in the usual manner. The section leader will explain the maneuver to the senior scout, he will point out the position of the target and the other elements (if any)

that are attacking it, he will tell the scouts whether the purpose of the movement is fire or immediate assault, and will indicate the general route to the position.

The orders of the section leader might be as follows: "Scouts and non-commissioned officers here. . . . The enemy in the farm and woods yonder (pointing) are holding up our advance. The 1st section will continue to fire from its present position. We will move up to the head of that ravine and attack the farm with fire. Jones, take charge of the scouts and precede the advance. I will

Automatic

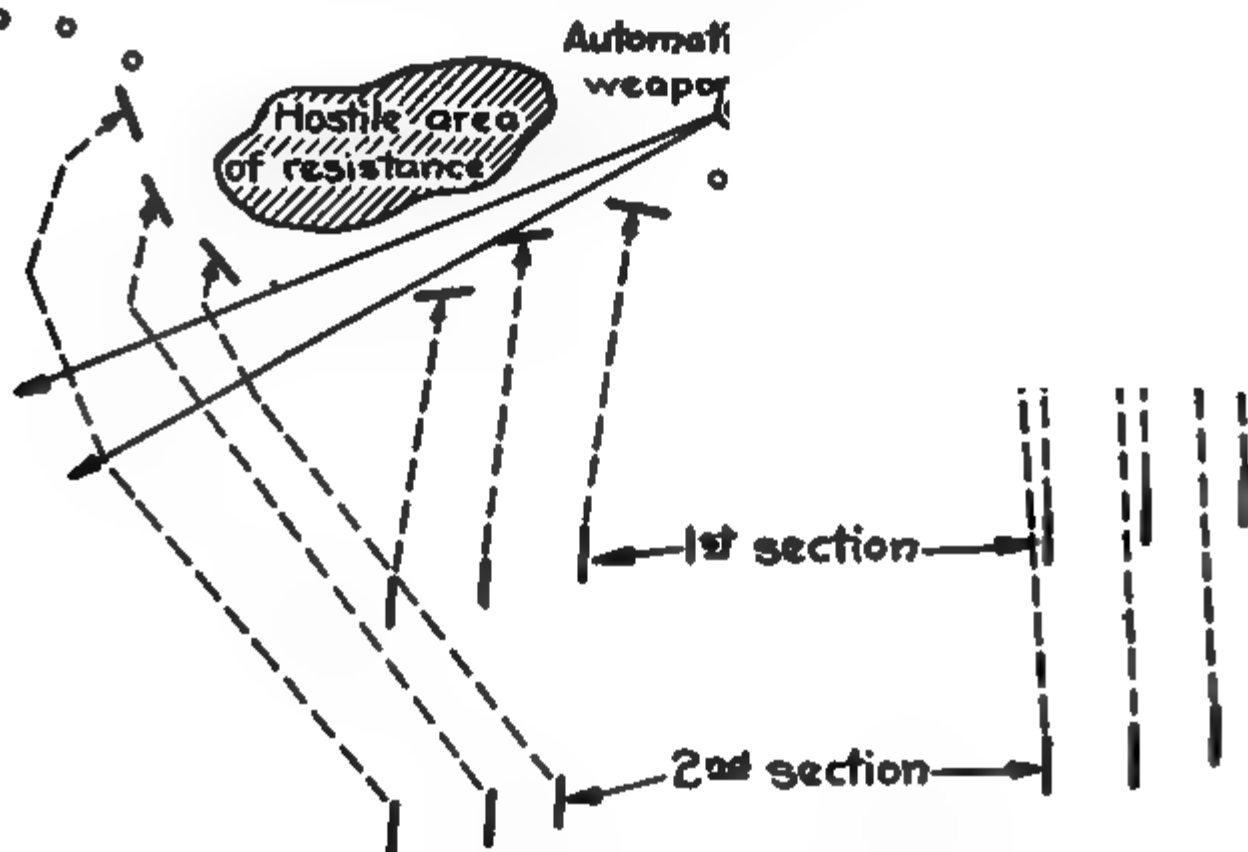


Fig. 1. The right way

Fig. 2. The wrong way

PLATE 366.—Enveloping Tactics in Platoon Attack.

FIG. 1.—The Right Way. The assault platoon has been held up by a hostile resistance. The leading section extends in irregular formation, avoiding the dangerous front and engaging the automatic weapon. Scouts work around the automatic weapon. The platoon leader, after a personal reconnaissance of the situation, envelops the weaker flank of the area of resistance with the support section, avoiding the fire of the automatic weapon. Scouts guide and cover the movement.

Results: Large arc of converging fire is secured and a corresponding divergence of the defender's fire, resulting in greatly increased pressure on the defender and fewer casualties for the attacker.

FIG. 2.—The Wrong Way. The assault platoon has been stopped by a hostile resistance. The leading section pushes forward. The platoon leader commits the support section on the same line as the leading section, with no attempt to envelop, no effort to engage automatic weapon, and using no scouts.

Results: Mixing of units, confusion in command, little additional pressure on defender and additional casualties for attacker due to crowding of men on dangerous front.

follow you at 40 yards (the movement is through a wood). Questions? Move out."

The senior scout forms his men as a patrol, with one in rear to transmit signals. They move out, utilizing such cover as is available, and observing to front and flank to guard the section against surprise. Moving as far up the draw and as rapidly as is possible without being discovered from the farm, Jones selects a suitable fire position whose extent is equal to the deployed front of the section. Here the scouts lie down and wait for the section to arrive. They do not open fire on the farm, as its position is quite plain, and it is desired that the fire of the section should come as a surprise to the enemy. Jones points out the position to the section

leader as the latter arrives. The duty of the scouts is to cover the advance of the section, guarding it against surprise, to select the best route, and to select and outline (by occupying) a position as close as possible to the enemy without being discovered by him.

The section, in section column, or squad columns, follows the scouts. The section leader orders each squad as it approaches the firing position: "Form on line of scouts. Fire at will." Or if he wishes to withhold his fire until the section is in line: "Commence firing at my signal." If the position is one for assault he would order: "Form on line of scouts. Prepare to assault."

Further Duties of the Platoon Leader.

Having committed both his sections to action the platoon leader is confronted during the continuance of the action with the problems of reconnaissance, contact and intercommunication, supervision of fire and movement, security, and the assistance of his neighbors. He selects posts of command from which he can perform his duties, as we have explained. He changes his command post whenever necessary.

He observes the effect of fire, both his own and that of the enemy, and judges when fire superiority is attained and maintained. He maintains contact with company headquarters and the units on his flanks.

Whenever, in the platoon leader's judgment, there is an opportunity for forward movement, and his section leaders do not take advantage of it, he orders them to do so. He should be especially on the alert to take prompt advantage of the fire protection afforded by the accompanying weapons (machine guns, light mortars, one-pounders and 3-inch field pieces) whether this fire be directed at his own target, or some other element of the enemy which is firing on his platoon. By constant observation and attention he will often be able to foresee when this fire protection will be most effective, and can thus prepare in advance to take full advantage of what may be only a fleeting opportunity to move forward. For example, if he sees a light mortar adjusting its fire on a machine gun which is holding up his advance, he can judge when the shells will begin to fall on the target.

The assault. The platoon leader must decide when his attack has reached a position from which an assault on the enemy will probably be successful. This is the critical moment of the fire attack, and the ability to sense when it has arrived will be a test of the platoon leader's judgment. One or two automatic rifles in the hands of determined men have often checked an assault which had only 50 yards to cover. A number of considerations enter into the decision: The physical condition of his own troops, their position, the degree of fire superiority established, the nature of the terrain, the numerical strength of the enemy, the nature of his defenses, including obstacles.

If the platoon is in good physical condition (not exhausted), if it has greater strength and marked fire superiority over the enemy, and if the terrain, including the defensive works of the enemy, presents no serious obstacle to movement, the platoon should be able to advance in a single swift rush over 50 to 100 yards distance, close with and overcome the enemy.

If the terrain does not permit of rapid movement, or if the assault must be launched from a position 100 to 200 yards distant from the enemy, it may be necessary to conduct it in a more deliberate manner, using marching fire of all weapons to cover the movement. In marching fire riflemen halt and fire *aimed shots* from the shoulder. Automatic riflemen fire *directed shots* covering the hostile position, their pieces supported at the hip by the sling. Rifle grenadiers may remain in position, firing over the heads of the advancing troops. If the platoon is well supported by fire of the accompanying weapons, or if the enemy is noticeably weakening, an assault thus delivered will often be successful, even from a distance of 200 to 250 yards.

Having decided that the moment for the assault is at hand the leader must decide whether to charge simultaneously with both sections or whether to assault with one

section, covered by the fire of the other. Generally the former method (a simultaneous charge) will give the more decisive results.

If the assault is made by the entire platoon the leader should personally lead it. If it is made by one section only, circumstances such as the positions of the two sections, or the leader's own position, will decide whether he shall lead the charge, or whether he can best control the assault by remaining with the other section to employ it in meeting any emergency that may arise.

All men fix bayonets. Just before the assault there should be a sudden burst of fire. The platoon leader signals, "Fire faster," thus increasing his volume of fire, and at the same time giving notice to his trained platoon that the assault is about to be made. Selecting a position in which he can be seen by most of his men, and especially by his subordinate leaders, the platoon leader moves through the firing line, and by signal, order and personal example leads the assault.

Reorganization.—The assault results in more or less confusion in the attacking troops. At the conclusion of a successful charge the platoon must be halted, unless there is a section still intact and ready to continue the advance.

Prompt counter attack on an enemy who has penetrated the position is the rule in an organized and active defense. The most favorable time for such an attack is while the enemy is still in the confusion resulting from the assault. Accordingly the prompt reorganization of his command is one of the most important as well as difficult duties of the leader of an assaulting platoon.

The platoon leader at once selects the localities where the sections are to reform. It is the duty of each section and squad leader to reassemble his own command.

The platoon leader takes steps to protect the reorganization and guard against counter attack by posting covering groups to give warning of and delay the enemy's advance. These groups should consist of scouts and automatic riflemen, but often the leader must utilize the first men he can bring under control. A few automatic rifles with the covering groups will give them sufficient fire power to break up anything less than an organized and determined attack.

Having thus provided for the security of his command, the platoon leader proceeds to check and verify the reorganization, as follows:

a. He checks the subordinate leaders. He sees that each section and each squad has a leader and a second in command.

b. He checks the reorganized squads. He sees that each squad includes all the elements necessary to a complete fighting unit. These include, besides a leader and second in command, at least one scout, an automatic rifleman, and a rifle grenadier. If by reason of casualties, any squad does not include all these elements, he breaks it up and assigns the men to vacant positions in other squads.

c. He checks equipment. He sees that each squad includes an automatic rifle and a grenade discharger, that ammunition is properly distributed, and that automatic rifle magazines are refilled.

d. He checks the casualties, noting the number of men missing.

Having completed this inspection the platoon leader details a few of the men he can best spare (slightly wounded or exhausted), to conduct the prisoners to the rear. He makes report of the situation to his company commander.

Having completed these duties the platoon leader prepares to continue the advance, or to consolidate and hold the ground won.

Security. The measures necessary for the security of the platoon during the fire fight are included in those already discussed. They consist essentially of proper formations, continuous reconnaissance, intercommunication and contact.

Assisting neighboring units. The platoon will assist the advance of neighboring units as far as practicable. Usually the greatest assistance a platoon can afford to its neighbors will be a rapid and continuous advance, which will keep the enemy within the platoon's own zone of action so busy that he will have little opportunity to fire on neighboring units. A rapid advance by any platoon breaks down the resistances in neighboring zones of action by the threat against their flanks or rear. A platoon will seldom leave its zone of action to assist its neighbors.

Reports to superior commander. An important duty of the leaders of smaller units, and one too often neglected, is to keep their superiors advised of their location and situation. In order to intelligently support their subordinates the higher commanders must be constantly advised as to what is going on. Personal reconnaissance by commanders becomes difficult as the size of the unit increases. In the case of a division, for example, only a few matters of special importance can receive the personal attention of the commander. Nobody can know the situation of a platoon as well as the platoon leader himself. The latter should keep his company commander advised. The latter in turn advises his battalion commander, etc., and thus the division commander keeps in touch with the progress of his attack.

Matters of special importance should be reported as soon as possible, which will usually be immediately. Less urgent matters will be reported from time to time.

The position of the unit, the number of casualties it has suffered, the nature of the enemy's resistance and the state of the ammunition supply, are matters in which the high command will be especially interested.

COMBAT. THE DEFENSIVE.

Tactics of the Defense. Defensive Areas and Lines.

The procedure of the defense has been briefly outlined in the course in Musketry, which should be reviewed as a preliminary to the further study of defensive tactics.

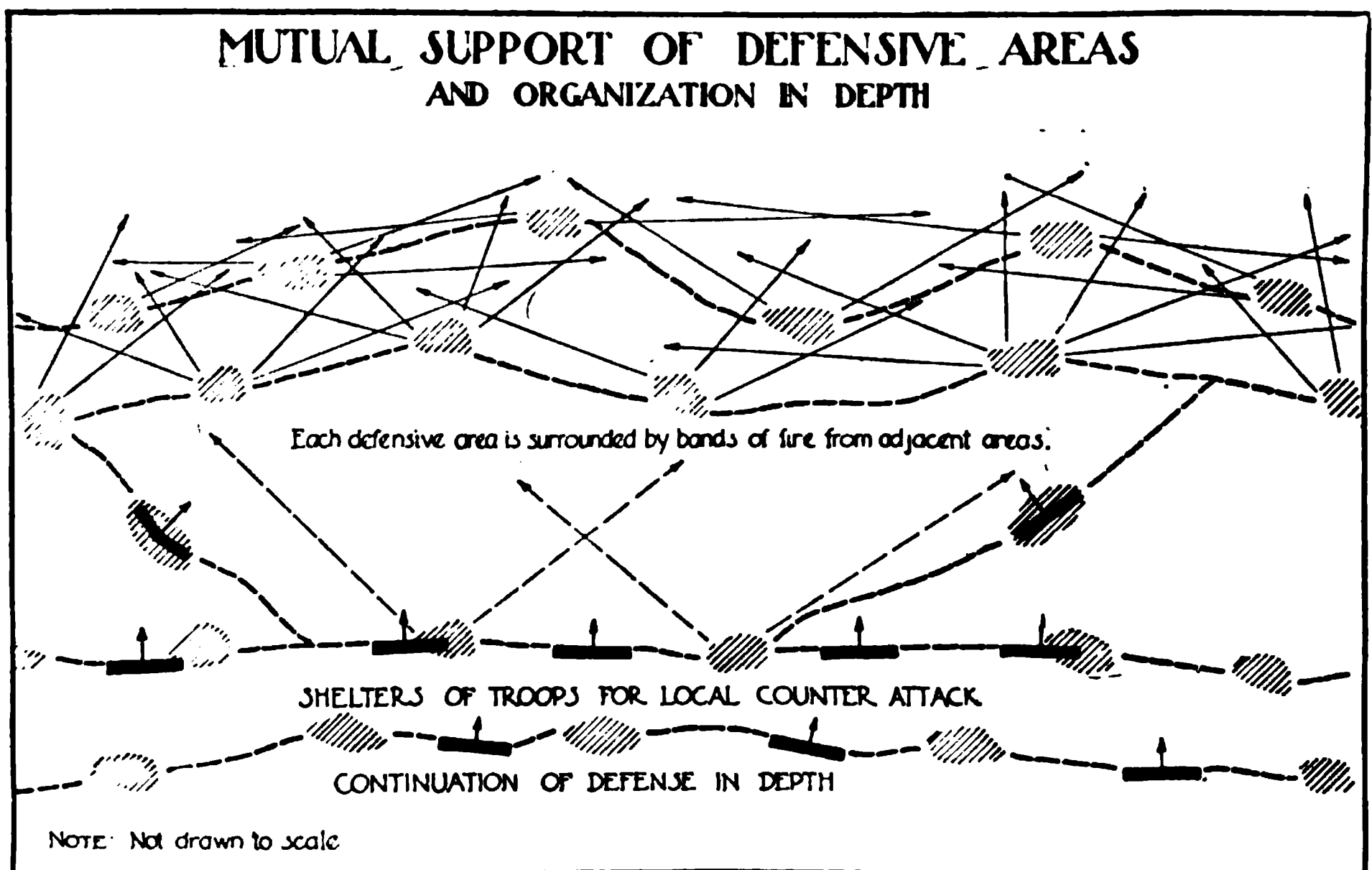


PLATE 367.

In brief the scheme of defense is a number of small defensible areas arranged checkerboard fashion, in such manner as to cover by fire all of the terrain over which the attacker must advance. These areas are known as *combat groups*. They are garrisoned by infantry units varying from a squad to a platoon, and often include also machine guns arranged for flanking fire. A number of combat groups compose a larger area known as a *strong point*, usually garrisoned by a company, and two strong points are usually grouped to form a *center of resistance*, garrisoned by a battalion, of which one company is usually held in reserve for counter attack.

If time and facilities be available the defender strengthens his position with works of field fortification. The trenches provide covered fire positions for the

defender's troops, and covered communications between the different parts of his position. Obstacles are erected to check the attacker's advance and to hold him under the fire of the defense, and covered emplacements are provided for machine guns, command and observation posts, etc.

This organization of the ground for defense is the art of field fortification, but defensive tactics are the same, however, much or little the ground has been organized.

The combat groups maintain their position and try to prevent the attacker from entering the areas which they occupy, by the fire of the weapons with which the squads, sections and platoons are equipped. Larger units (company, battalion,

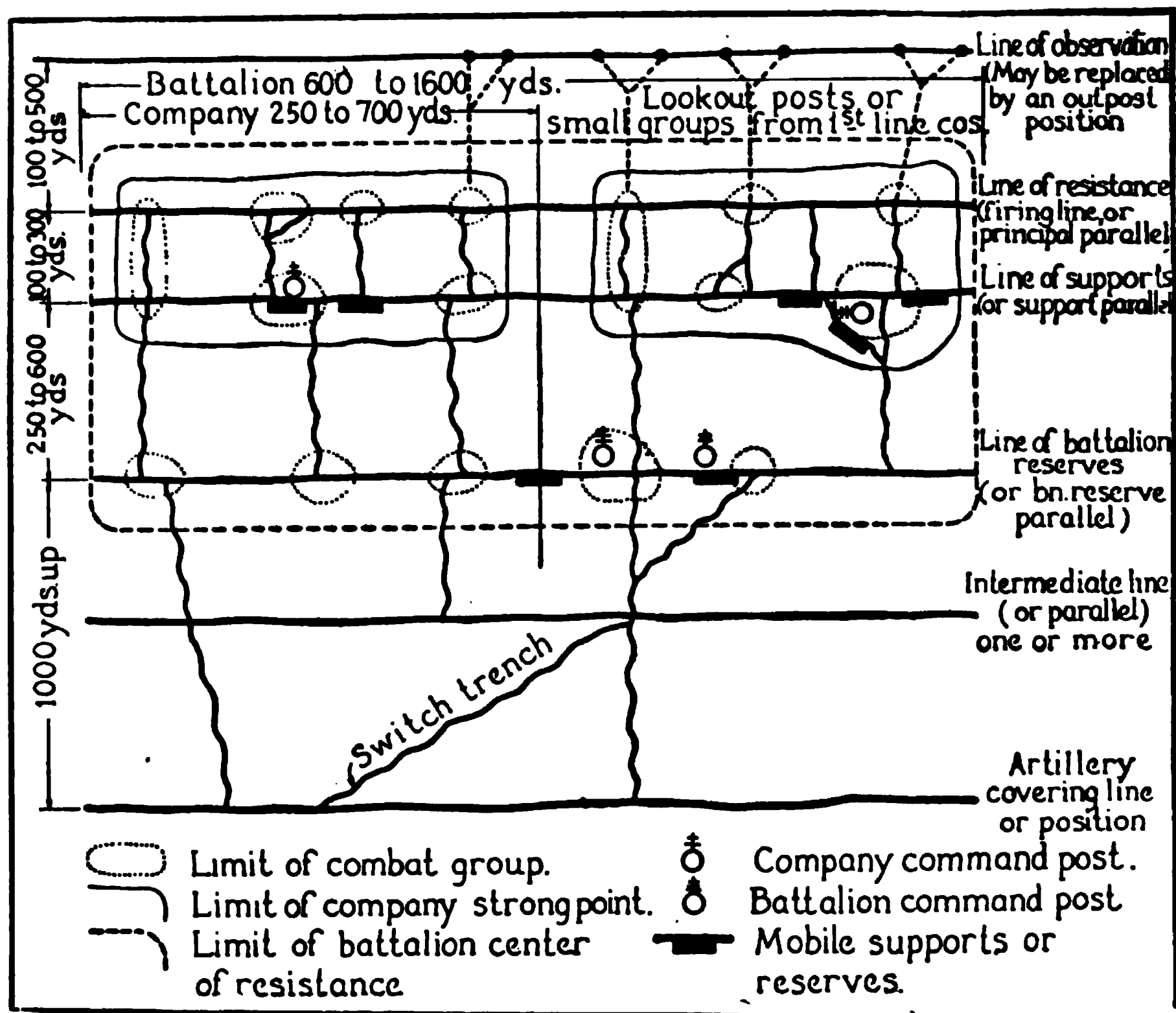


PLATE 368.—Right Line Diagram of a Defensive Position Showing Typical Relations of Parallels, Approaches and Defensive Areas; and an Example of the Distribution of a Battalion of Infantry. (Machine Guns not Shown.)

etc.) hold supports and reserves with which they attack and expel the enemy if he succeeds in penetrating the areas which they defend.

The auxiliary fire weapons support the infantry in defense in very much the same manner as in the attack.

This scheme of defense, the relation of the defensive areas and lines which make up a position will be better understood by reference to the accompanying diagrams, Plates 367 and 368.

The combat groups, or small defensive areas, are usually arranged in two lines, known as the firing line and support line, and these, with the line of battalion reserves constitute the essential lines of a defensive position. The mobile supports of the front line companies are usually held on or near the support line.

Additional lines of defensible areas may be located in rear, but are usually garrisoned only when necessary, as in case the attacker forces his way through the forward part of the position.

THE INFANTRY RIFLE PLATOON IN THE DEFENSE.

Phases of the Defense.

The defense naturally divides itself into two phases, *preparation for the defense* and *conduct of the defense*. The preparation for the defense may consist simply of properly disposing the troops to meet an immediate attack. Or it may involve months of labor in organizing the ground for resistance.

Preparation for Defense by the Platoon.

Dispositions of a front line platoon. A platoon may be assigned intact as the garrison of a single combat group, or it may furnish garrisons for two or (exceptionally) for three such groups. If practicable the platoon should be held intact. If it be divided into two groups it is desirable that each of these be a complete section. This, however, will depend on the nature of the terrain and the mission or extent of the task assigned to each group. In any event a combat group should consist of one or more complete squads. A squad should never be so dispersed as to be beyond the control of the squad leader, and squads in defense, as in attack, should act as units. Automatic riflemen and rifle grenadiers should not be separated from their squads to form groups of these weapons.

A platoon, as a combat group, may hold one or two squads or a section as a mobile support for reinforcement or counter attack. A smaller group would have no support, but might shift squads or individuals from one part of its area to another, to meet emergencies. Supports are held slightly in rear of the center of the area, under natural cover, or if there be no natural shelter they are intrenched.

If the platoon is divided into several groups the leader establishes his command post in a central location where he can control his men. He leaves the immediate command of each group to the senior non-commissioned officer therewith. The groups in any one platoon should always be next to each other.

The combat groups of a single company in the first line will usually be in one line (firing line) or in two successive lines (firing and support lines). A platoon as a combat group might cover both lines. A smaller group would be in one line only.

Combat groups. The area occupied by a combat group should be small enough to insure unity of action and control by its leader, and large enough to properly cover the sectors of fire assigned to it and to avoid crowding and exposure. This area may vary from that occupied by a single squad (50 x 50 yards), to that occupied by a platoon covering two lines of a position (150 yards front by 200 yards depth). The distance from center to center of combat groups on the same line, should never exceed 400 yards even in open country, and may be as little as 100 yards.

Defense orders. The company commander will, when practicable, issue his initial defense order in the presence of all officers and non-commissioned officers down to include the section guides. He will indicate on the ground the location of each combat group, and either at that time or later, he will indicate its "A" and "B" sectors of fire.

If the orders are not issued in the presence of the non-commissioned officers, each platoon leader commanding one or more combat groups will issue an order to his non-commissioned officers, including squad leaders if practicable, about as follows:

Par. 1. Information of the enemy and of supporting troops to include those covering the front, and the companies on the flanks. The general defense plan of the company to include dispositions of all platoons. Location of machine guns.

Par. 2. The mission and general defense plan of the platoon—to organize and defend one or more combat groups at the localities indicated.

Par. 3. Composition and commander of each combat group, and exact location. Mission of each group—to cover the fronts (flanks or rears) of certain other designated groups, defend certain intervals, areas or dead spaces. Any special missions.

Instructions as to nature of works to be executed, assignment of tasks, working parties and reliefs, tools and materials. Measures for security if such be necessary.

Par. 4. Location of rear echelon of company, dumps of engineer material, battalion aid station, and routes to these localities. Dispositions of packs, rifles or other personal equipment during work. Any other necessary administrative details.

Par. 5. Location of platoon and company command posts, and posts of all neighboring combat groups. Instructions as to pyrotechnic signals, if any are prescribed.

Constructing the works. Assignment of tasks. Having issued his orders the platoon leader, assisted by the platoon sergeant and other men, proceeds to trace on the ground the trenches of each combat group, using tracing tape if available.

The trace of the works is adjusted to the terrain, to provide a good field for grazing fire to front, flanks and rear (over the parados); to the machine gun flankments; and to adjacent combat groups, to afford effective fire support.

It is desirable that these locations be examined by the company commander before work is begun.

The platoon leader then issues tools and distributes the working parties to their tasks, or causes this to be done by the combat group commanders under his supervision. Each combat group digs its own trenches.

The platoon leader designates the fire sectors for each group, informs his subordinates of the ranges to important points in the foreground, causes each combat group and each squad to prepare a range card, showing the combat posts of the troops and the sectors of fire, defined by landmarks.

The platoon leader carefully selects his own command post. The post should afford a view of the entire area occupied by the platoon, and of the surrounding terrain, well to the front, and at least as far as all adjacent combat groups in any direction, as well as a view of the company command post. There should be sheltered, or at least partially sheltered runner routes from the command post to the command posts of all neighboring combat groups, both those comprised in the platoon and others, to the company command post and to any auxiliary observing stations within the platoon area.

Each combat group commander establishes a similar command post.

The platoon leader will usually post a runner as an auxiliary observer on each flank of his area. One runner may be sent to the company command post.

In a fully organized position sheltered routes for runners are provided by the trenches. When the trench system has not been completed the exposure of the runners is necessarily great. They must be skilled in using natural cover.

The platoon leader designates the sentries, observers and snipers to be maintained within his area. He prescribes their duties, stations and reliefs, by night and by day. The remainder of the men, except when called to their combat posts, are engaged in extending or maintaining the defenses, performing other miscellaneous duties, or resting and sleeping.

The duties of snipers have been discussed in the course in Musketry.

The platoon leader will personally direct or closely supervise all work within his area. He will make such progress reports to the company as the company commander orders.

Defense Plans.

In defense, as in attack, it is the leaders of the small infantry units, and especially the platoon leader, on whom rests the immediate responsibility for victory or defeat.

We have pointed out that in the attack the platoon leader must be able to meet emergencies arising without warning, on unfamiliar ground. The chief advantage enjoyed by the defense is the opportunity to study the situation in advance and foresee the events that may arise, to an extent that is seldom possible in attack. The ground is not unfamiliar, and emergencies seldom arise without some warning.

But this advantage requires study. If the platoon leader simply sits down, his mind at rest, and waits events, he throws away his greatest advantage. Defense plans do not mean to simply build field works, place men in them and then wait for the attacker. The platoon leader's task is to maintain himself in his area. His limits of space are narrow. His works have been properly constructed, his men are properly placed, they know what to do. Apparently nothing further is necessary except to wait for the enemy to make his appearance. But here arises a grave question. *Are* the works properly constructed, *are* the men properly placed, *do* they know what to do—for *every* emergency? If the platoon leader asks himself this pertinent question too often he will find that the answer is "No."

The infantry in defense fires on the target which is most dangerous at the time. But this cannot be left to the judgment of the soldier or even the squad and section leaders. They are too apt to fire on the most easily visible target, which is not always the most dangerous. If left to themselves there would be too great a chance that all would concentrate their fire on the conspicuous targets, leaving portions of the front uncovered. Although fire must certainly be concentrated on the most dangerous target, other targets which may become dangerous must not be neglected, and every part of the front must be under observation and when necessary under fire, at all times.

To make sure of this "A" and "B" fire sectors are named for the infantry groups, in such manner that the entire front is covered, if orders are obeyed. But this is not enough. The enemy may penetrate the position, so that fire to the flanks and even to the rear may be required. Certain elements of the defense will be put out of action, throwing additional duties on the remaining elements. To meet such situations fire must be switched, emergency fire sectors established, riflemen must be shifted about within the areas of the combat groups, reinforcements for the fire units must be sent in—all this in addition to the counter attack.

It is possible, by careful study of the situation, to foresee many if not most of such emergencies, and to plan for them in advance. The platoon leader, if he is qualified to fill his position, should thus study his situation.

In solving his problems in advance, the platoon leader prepares a *real* plan of defense. He will be better prepared to maintain his position and defeat the aims of the attacker, than the thoughtless leader who relies upon his instinct or intuition to meet the emergency after it has arisen. Few leaders are endowed with the mysterious power of solving such problems as these by intuition. But any intelligent man can cultivate the habit of thinking out his problems, which is far better. Animals have instincts. Man alone possesses the superior power of reason, and he should learn to use it.

Meeting the emergencies of combat. The emergencies of combat, including those which may not have been foreseen, are met by:

- a. Switching the fire of automatic rifles, squads or larger units.
- b. Changing the positions of these elements.
- c. Use of supports for reinforcement and counter attack.
- d. Fire support of auxiliary weapons.
- e. Assistance from neighboring combat groups.
- f. Assistance from the company (reinforcement or counter attack).

Fire support of auxiliary weapons. The platoon leader should know the positions of the supporting weapons, their sectors of fire and ranges, in order that he may know when their assistance can be rendered. Requests for such assistance are usually made through the company commander, the position and nature of the target being plainly indicated, by messenger, sketch or tracer bullets.

Example of Defense Plans.

The more important items in the defense plan of a combat group will be understood from a reference to Plate 369. The central section of trench is that occupied by such a group. The shaded areas on either side represent the adjacent groups.

The garrison consists of the 1st section of the 2nd platoon of the company. The combat missions of the group and its "A" and "B" sectors have been indicated by the company commander. The sector of fire assigned is wide, and the group is required to defend the fronts of both adjacent groups in the same line. The combat group commander decides that he will need all three of his squads to develop the required fire power, and that he cannot provide a mobile support.

The combat group commander selects a number of prominent features of the terrain in the foreground and to the flanks, approximately on the lines determining his "A" and "B" sectors.

He then traces, or assists his platoon leader in tracing, a sufficient length of trench to accommodate his three squads without crowding. This trace will run approximately along a contour, with sufficient grade for drainage. As soon as the trace is laid out, work of excavation is started.

The combat group commander (or the platoon leader) visits the adjacent groups to make certain just where their trenches will be located. He also consults the commander of the machine guns in his area, to insure that his defenses will not interfere with the fire of the machine guns.

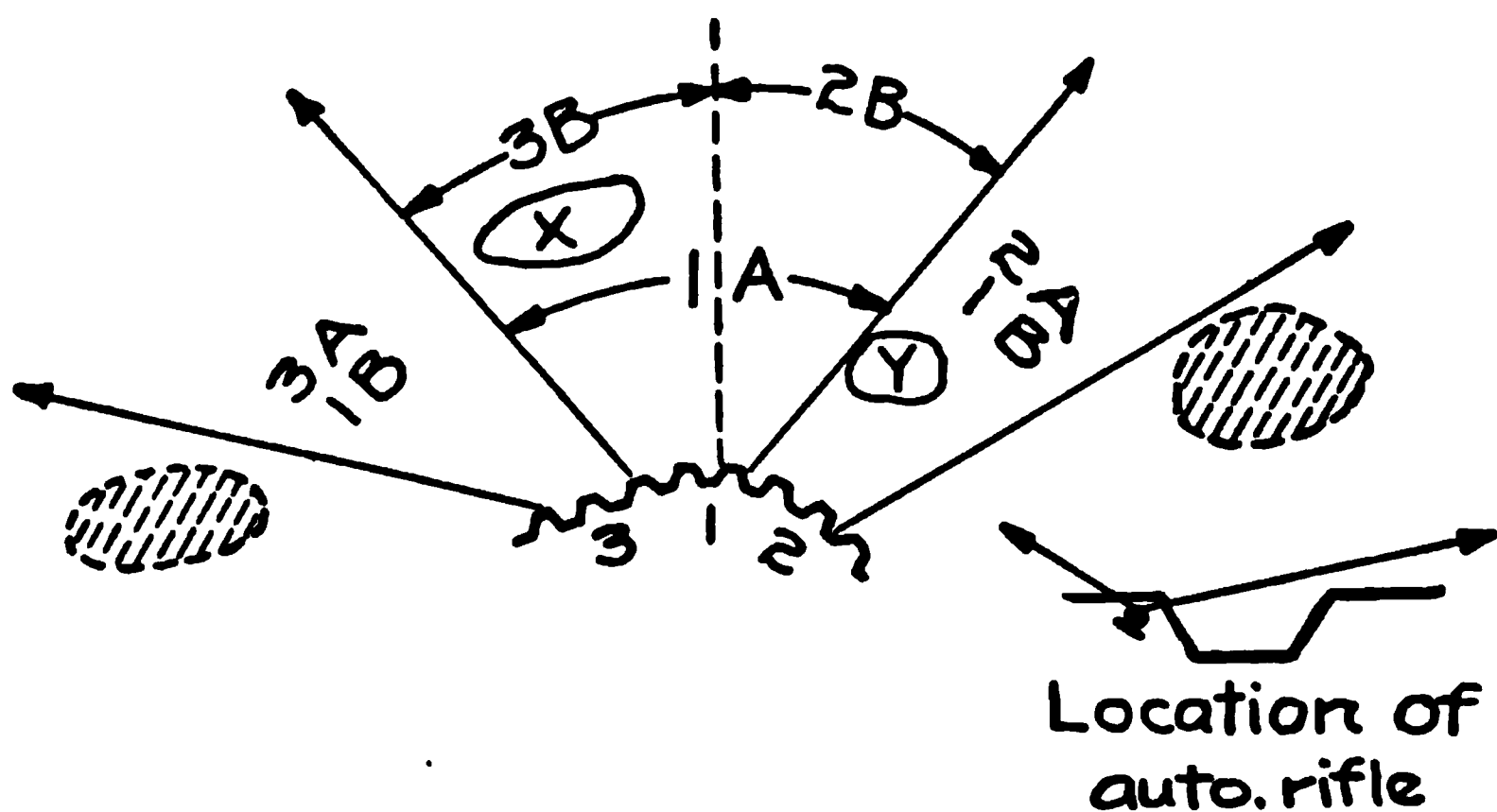


PLATE 369.—Defense Plan of a Combat Group.

The combat group commander then makes a sketch of his defenses somewhat like Plate 369, except that the features of the terrain marking the limits of his "A" and "B" sectors will be shown. He will also mark on this chart the ranges to all important localities in his front, as soon as these are determined. A copy of this sketch is given to the platoon leader, and to each of the squad leaders.

The three squads are deployed, as shown in the sketch, from right to left in the usual order, 2-1-3, with intervals between men of at least five yards—more if necessary for effective fire.

The "A" sector of the 2nd (right) squad is the right "A" sector of the group, covering the front of the next combat group to the right, and the unoccupied interval between groups. Its "B" sector is the right half of the "B" sector of the group (Plate 369). The "A" sector of the 1st (center) squad is the "B" sector of the group. It has two "B" sectors, one in front of each adjacent combat group. Half of the squad is assigned to each of these "B" sectors. The sectors of the 3rd (left) squad are similar to those of the 2nd.

The commander finds, on examining the terrain, that there are two small areas (X and Y) in the near foreground, which are defiladed from the fire of his group. He marks these areas (by stakes and cloth, at their near edges), accurately determines their ranges (by pacing), and points them out to his squad leaders. They can be reached by rifle grenades should the enemy find a lodgment in them.

These dispositions effectively cover the sectors he has been ordered to defend. But the combat group commander realizes that, in case of a hostile penetration of the intervals on his right and left he may have need of fire directly to his flanks and even to the rear. To provide for this he adopts the following measures:

1. He places the automatic riflemen of the 2nd and 3rd squads on the outer flanks of these squads and at a corner of a fire-bay, where they can fire well to the rear if necessary and readily switch their fire from one direction to another.

2. He provides a niche in the parados (bank of earth immediately in rear of trench) directly in rear of the automatic rifleman of the 1st squad from which position he can fire to the right and left rear, or directly to the rear, in emergency. This position will be occupied if the occasion arises.

3. He prepares portions of his trench for fire to the rear. In particular this fire will cover the flanks of the machine guns in rear.

4. If an approach trench leading into the area of the combat group from the support line is dug, portions of this trench will be prepared for fire in either direction, and occupied in case of emergency.

Each squad will fire on any target appearing in its "A" sector, within a stated range. When no target appears in the "A" sector it will fire on any target appearing in its "B" sector. See also course in Musketry.

CONDUCT OF THE DEFENSE.

As the attack approaches the position the combat groups open fire at a range prescribed. Snipers or other expert riflemen fire on the leaders of the attack.

The platoon leader, assisted by his platoon sergeant and observers, watches the progress of the attack. He sees that his men take their combat positions promptly, and carry out the measures provided for in the plan of defense, including switching fire and changes of position when necessary. He sees that fire is directed upon all threatening targets. Should his subordinates fail to carry out suitable measures, and especially should any threatening target be overlooked, he gives necessary instructions by runner or signal, or indicates targets by tracer bullets fired by a runner or scout at or near his command post. If he has a support he utilizes it for reinforcement or counter attack. He calls for fire assistance from the auxiliary weapons, or support from the company, when necessary.

Intercommunication in the platoon during defense is much the same as during attack. It is largely a matter of visual signals and safe runner routes. There should be visual connection with company headquarters.

The platoon leader keeps his company commander advised as to his situation, especially as to the progress of the attacker.

The platoon sergeant, in defense as in attack, is assistant to and replacement for the platoon leader. His post is with the platoon leader unless the latter otherwise orders.

Functions of Support Platoons.

Support platoons of front line companies are usually held mobile under cover, in or near the support line. In emergency they may be assigned to garrison combat groups in the support line, or a portion of the platoon may be thus assigned.

The chief function of company supports is counter attack. The leader of a support platoon should study the routes over which he will move and the ground on which he will operate in case of counter attack. He will familiarize himself with the counter attack plans in the company plan of defense, and will recommend to the company commander such additional plans as he considers wise.

SECURITY. MARCH PROTECTION.

Introduction. In the preceding discussion on offensive and defensive combat we have seen that troops fight in a *deployed* formation, that is, they are spread out from right to left over a considerable front in order to develop their *fire power*. If they were arranged one behind the other instead of side by side, only the men in the front rank could fire.

But this battle formation is not suitable for *moving* from place to place. It is difficult to control the men when they are thus spread out. Accordingly when troops march from one place to another they move in a *column* of twos or squads, using the roads as far as possible, because movement across country is slow and tiresome. The columns prescribed in the drill regulations are the regular formations for marching.

In mobile warfare, which is the kind Americans have been used to, troops fight occasionally, but they move almost continually. In the Shenandoah Valley during our Civil War, Stonewall Jackson's troops were constantly on the move. They would fight a battle in one place and then suddenly appear and surprise the enemy at another place, miles away.

The ability to march (mobility) is one of the principal characteristics of good troops. It can take the place of numbers. Troops who can make long marches and arrive fit for battle are worth far more than those who cannot march without breaking down.

Success in marching depends on discipline and training, and march training is second in importance only to combat training.

Marches.

There are proper rates of speed for marching and proper distances for a day's march, which we know from long experience of what men can stand. The proper rate for infantry on the roads is one mile in 20 minutes. They should have a rest of 10 minutes in each hour, so their proper hourly speed is $2\frac{1}{2}$ miles. If they be constantly required to march faster than this they will break down.

A small command of good infantry can march 15 to 20 miles per day, and marches up to 40 miles have been made. Large bodies of good troops can march 10 to 15 miles per day. If it be necessary to make a long march, increase the number of hours, but do not exceed the rate of $2\frac{1}{2}$ miles per hour.

Hourly halts should be at regular times, for example 10 minutes before each hour until the hour. Let the men fall out by the roadside and rest. If the march extends into the afternoon there should be a long halt, at least an hour near noon. Marches are made at "route step."

Marches should take advantage of the best hours of the day. They may start a little after daylight, especially in summer, and should end in time to allow the men to make camp before dark. In very warm weather the early morning is best for marching, in cold weather the middle of the day.

Night marches are made only in emergency—when they are really necessary.

Covering Detachments.

We have seen that troops cannot march when they are deployed for battle. And they cannot fight when in column of route on the road. If a column of troops on the march should suddenly encounter an enemy deployed for battle the dense mass of men would be badly shot up before it could deploy. The commander could never be excused if such a thing should happen.

So a column of troops on the march must take precautions to guard itself against a surprise attack. It does this by placing small detachments between the main column and the enemy. These covering or guarding detachments are called, according to their positions, *advance guards*, *rear guards* and *flank guards*. If the force runs into the enemy, or the enemy approaches from any direction he is met first by one of the covering detachments. This detachment should be *strong*

enough, and far enough from the main body, to hold the enemy in check until the main body can prepare to defend itself, to attack or to retreat as the case may be.

The covering detachments protect themselves in the same manner that they protect the main body, by sending out smaller detachments, which in turn send out other still smaller detachments. The results of all this is that the first troops to encounter the enemy will be or *should* be a small patrol. This patrol may run into an ambush. But if so it consists of only a few men, who can rapidly deploy and take cover. But even if they should be badly shot up it is better that this should happen to a small patrol than to a large body. And the firing will give warning to the troops in rear.

The sizes of these covering detachments depend upon the size of the entire force, and the amount of risk. Often in a forward march if there be no possibility of an attack from the rear, a rear guard may be unnecessary; and similarly only a very small advance guard or "leading troops" may be needed in a retreat.

March protection is so important that every officer and soldier should be familiar with his duties in these covering detachments. So let us now see what these duties are.

ADVANCE GUARDS.

General duties of advance guards. The covering detachment in front of a column of troops in an advance is called an advance guard. It always marches by the same route as the body which it covers, keeping the same distance ahead of it.

The duty of an advance guard is to provide for the *safe* and *uninterrupted* march of the main body. Specifically its duties are:

1. To follow the route prescribed, always covering the front of the main body.
2. To investigate culverts, bridges, fords, etc., to see if they are safe.
3. To remove obstacles to the march, so far as possible, make temporary repairs to bridges, remove stalled vehicles, etc.
4. To gather information of the enemy or of other matters of importance.
5. To promptly drive off small bodies of the enemy trying to delay the march.
6. To guard the main body from surprise, including surprise fire.
7. To seize and hold important tactical points whose possession is necessary to the march, such as bridges and defiles.
8. In case of contact with a considerable force of the enemy to find out his strength and position, and start the attack (or defense).
9. In case of attack by a strong hostile force to hold it in check long enough to permit the main body to deploy, the advance guard seizing a defensive position.
10. To maintain constant contact between all elements of the advance guard, with the main body and any other detachments.

Each of these important duties involves many details, and an advance guard will meet many emergencies. The proper conduct of an advance guard calls for judgment and initiative on the part of the commander and his subordinates, and is a test of the efficiency of the leaders, and of the discipline and training of the troops.

The strength and composition of an advance guard should be such as necessary to the performance of these duties.

Strength and composition. The strength (numbers) of an advance guard is proportionate to that of the entire column, varying according to circumstances from one-third to one-twentieth or less. Where there is any probability of encountering the enemy the strength should be nearer the former figure, from one-fourth to one-third the entire command. The following would be appropriate advance guards when contact with the enemy is probable:

For a platoon, 1 squad.

For a company, 1 section or 1 platoon.

For a battalion, 1 company.

For a regiment, 1 battalion.

It will be evident that, as a large body requires a longer time to deploy for combat, its advance guard should have a greater power of resistance than that of a

A COMPANY OF INFANTRY AS AN ADVANCE GUARD TO A BATTALION

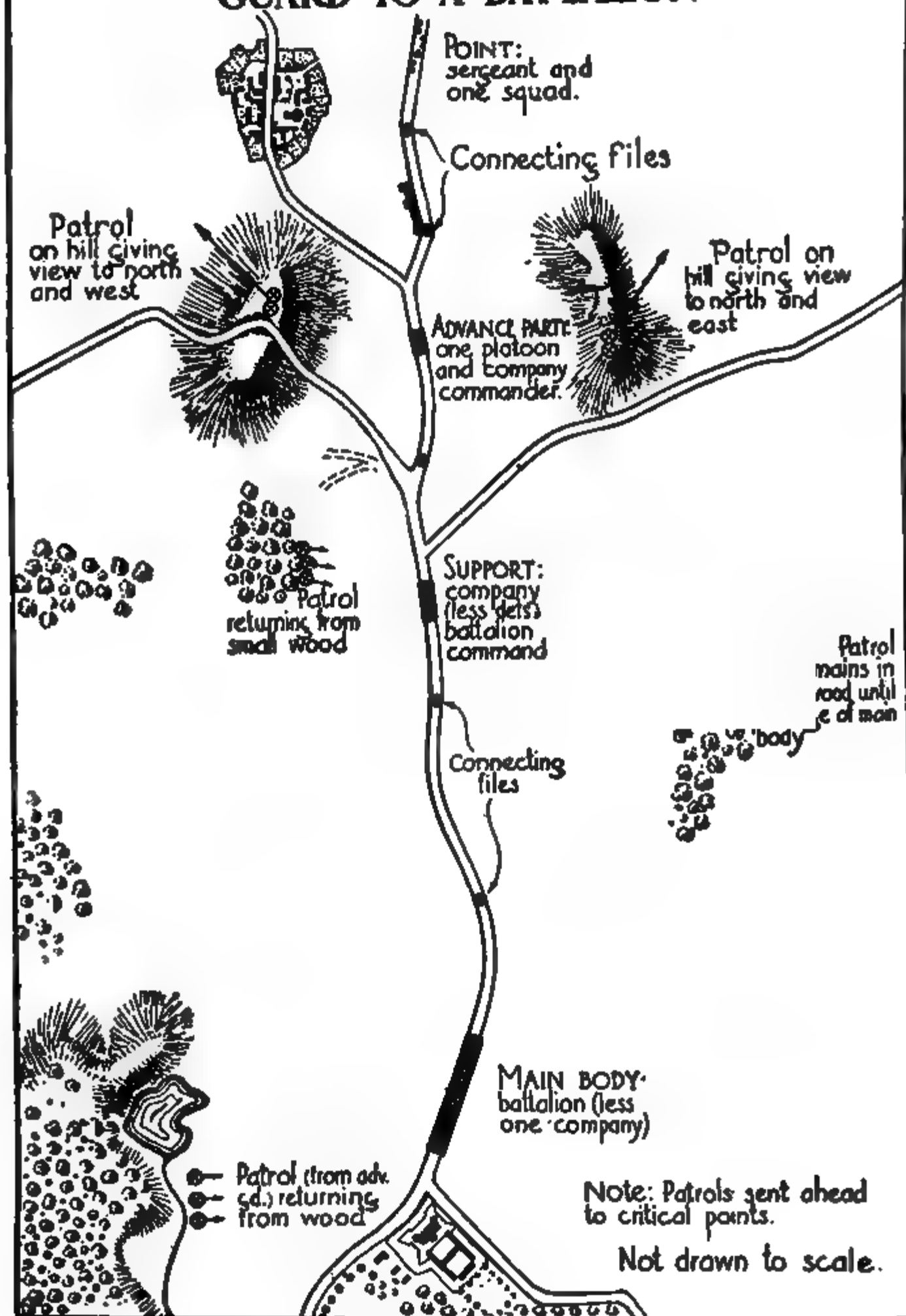


PLATE 370.

small command. For example: A rifle platoon consists of 58 men. In column of route it occupies about 30 yards' road space. To deploy it for combat a simple command, "As skirmishers, MARCH," is all that is required. To estimate the situation, form a plan, give and execute the order, takes from one to two minutes. A squad at a suitable distance in front can give warning in time and delay the enemy long enough to permit this deployment. A division, occupying over twenty miles of road space will require several hours to prepare for combat. Evidently it will require a strong advance guard to hold the enemy while this is being done.

A large advance guard may include all arms of the service. The infantry will always be the most important element, and the advance detachments which first encounter the enemy will usually consist of infantry rifle platoons and companies.

Sub-Divisions of an Advance Guard.

We have noted that an advance guard protects itself by sending out a detachment, which in turn sends out a smaller detachment, etc. These sub-divisions in order from front to rear are called:

The point. The advance party. The support. The reserve.

In very small advance guards the reserve, or support and reserve, may be omitted. Each body includes all in front of it. The principle of the *integrity of tactical units* is observed in sending out detachments. Thus a battalion puts out a company, rather than two platoons, a company puts out a platoon complete, rather than 4 or 5 squads.

Whatever the size of the advance guard its leading element will be a small patrol, usually a squad, and the next element in rear is usually a platoon. The distances between these groups depends chiefly on their size, and so it is impossible to be sure of the size of the entire force by seeing only its leading detachments, as these are about the same in any case.

In this scheme the infantry rifle platoon acts as advance party, a squad from the platoon acts as the point, and members of the platoon act as flank patrols, and connecting files.

Examples of Typical Advance Guards.

Following are some examples of the strength, composition and formations of advance guards and their fractions, appropriate for a march in the presence of the enemy. Parentheses indicate exceptional assignments which should be made under exceptional conditions:

1. Point: 1 squad, patrol formation.
Distance: 150-250 yds.
Main body: 1 platoon (less squad), col. of twos or section cols.
2. Point: 1 squad.
Distance: 150-250 yds.
Adv party: 1 platoon (less squad).
Distance: 300-450 yds.
Main body: 1 company (less platoon), col. of squads.
1 plat machine guns.
3. Point: 1 squad, intelligence patrol (2 men) attacked.
Distance: 150-250 yds.
Adv party: 1 platoon (less squad).
(1 O, 2 men, engineer plat.)
Distance: 300-450 yds.
Support: 1 company (less platoon).
(1 plat machine guns.)
(1 plat engineers (less det))
Distance: 400-600 yds.
Main body: 1 battalion (less adv gd) column of squads.
1 plat howitzer company.
(1-3" gun section.)

The Infantry Point.

The infantry point is the leading dismounted element of an advance guard. In a small advance guard it consists usually of a single complete squad. There would seldom be any occasion to make it smaller. In a large advance guard a platoon might be designated as the point. If so it would put out a squad to cover its front. Accordingly, the point is ordinarily a squad, and every squad should be trained to perform the important duties of the point. Each squad includes an automatic rifle. If the point be less than a squad it should still include an automatic rifle.

The point is a patrol. It is organized as a patrol, marches in patrol formation, and conducts its operations in accordance with the principles of patrolling. However, the situation of the point is different from that of an independent recon-

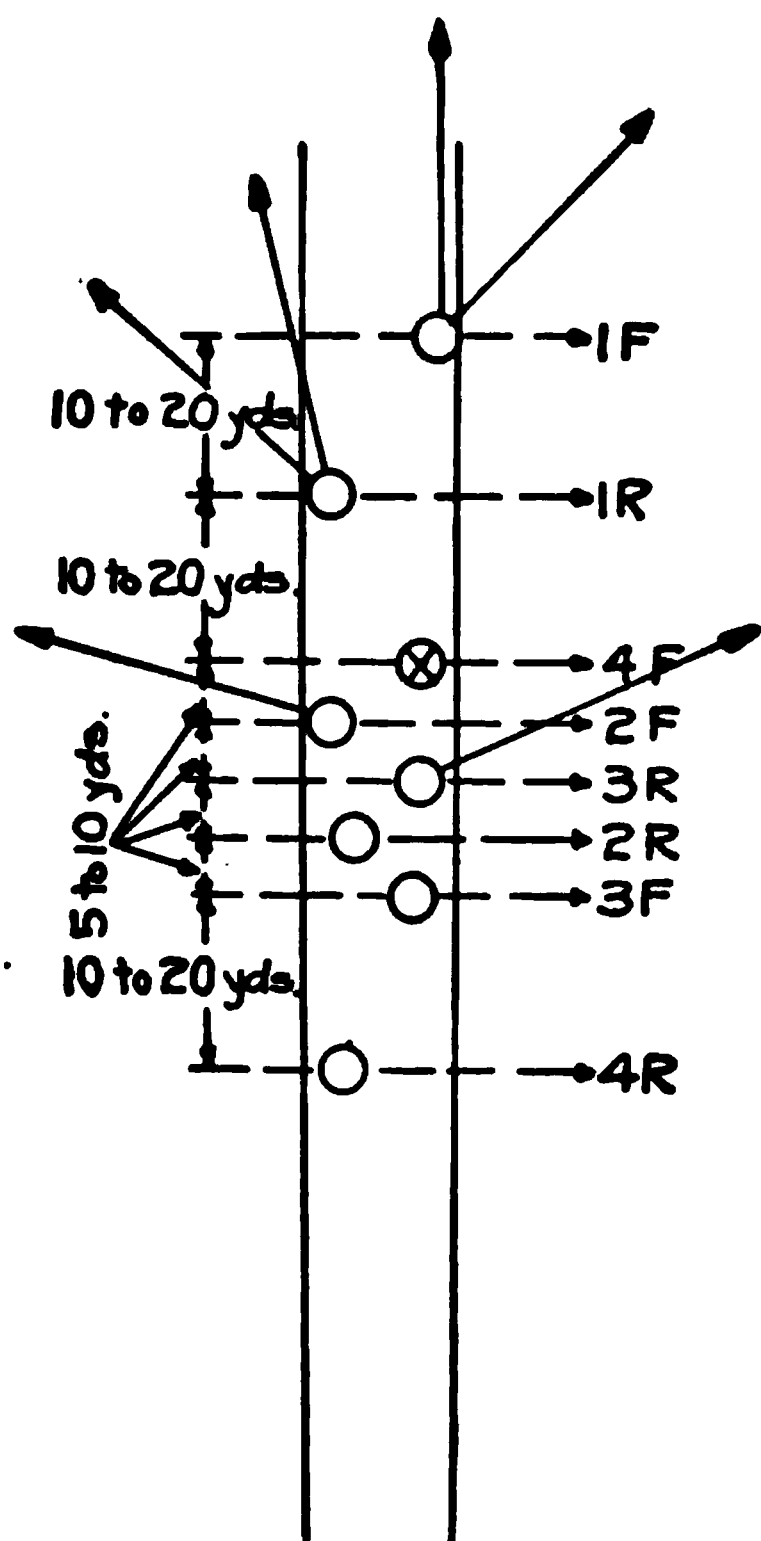


Fig. 1

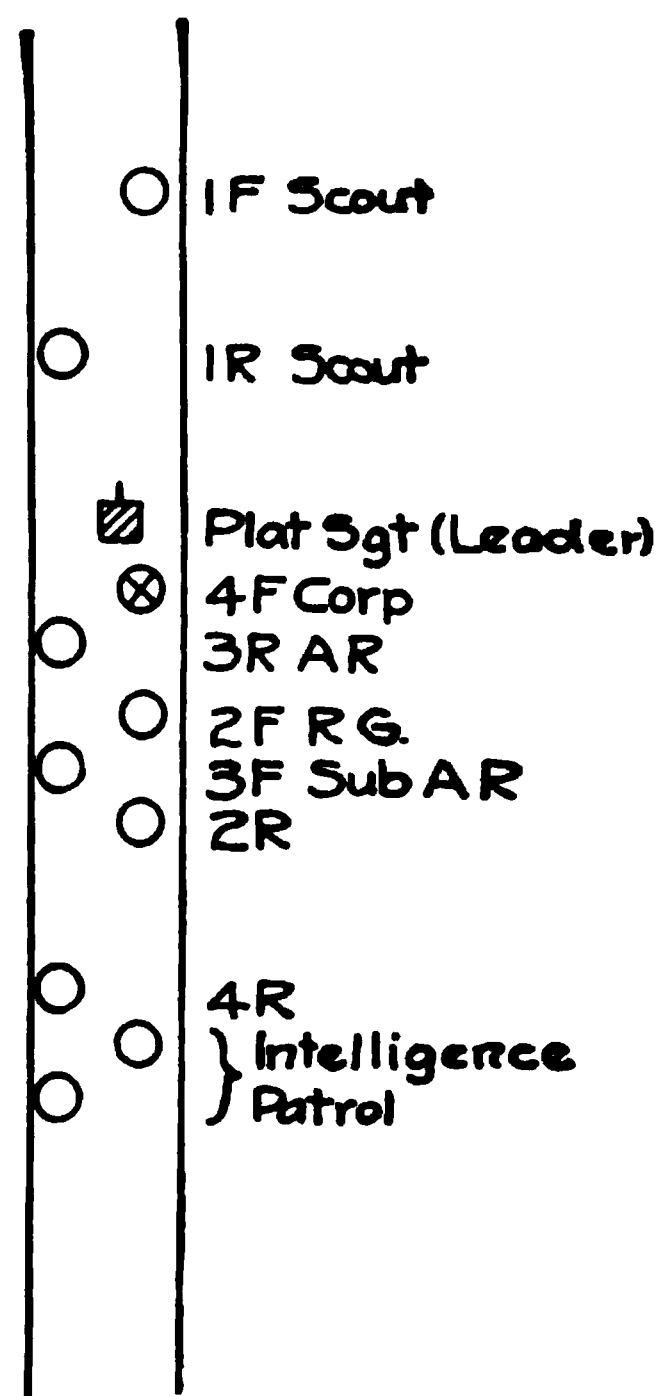


Fig. 2

PLATE 371.—Formation of the Infantry Point.

noitering patrol. The point is part of a column on the march. Therefore, it must maintain a steady rate of advance and follow a prescribed route. Its principal duties are not to gather *information* and keep *concealed*, but to push resolutely forward and to facilitate the *progress* and provide for the *security* of the troops in rear.

Formation. As there are no troops in front to protect the point, it marches in some invulnerable patrol formation, with extended distances. As in any patrol the leading men observe to the front and flanks, the leader with the main body of the patrol follows, and in rear is a "get-away" man, who is also charged with watching for signals from the rear. Plate 371 indicates two suitable formations of the point.

With reference to Fig. 1, Plate 371: The two leading men are the scouts of the squad. One observes to the front and right, one to the front and left. Because they

are exposed they are separated by a considerable distance, being on opposite sides of the road, one of them 10 to 20 yards in rear of the other. Next in rear is the corporal in command. He takes a position where he can himself observe, where he is in verbal contact with his scouts, and also with his principal fire power—the automatic rifleman. The remaining members of the squad (except No. 4, rear rank) constitute the main body of the patrol. They are not charged with observation and hence keep themselves concealed as much as possible. The distances between them may be the same as or less than the distance between the scouts. The automatic rifleman and rifle grenadier are close to the squad leader, where he may easily direct and control their fire. No. 4 of the rear rank (2nd in command) marches in rear. It is his duty to watch the conduct of the men in front, and escape with information in case of surprise. He is also charged with watching for signals from the rear.

The men march alternately on opposite sides of the road. In very close country, at night or in a fog, all distances might be reduced to 5 yards or even less.

Conduct. The point should remain as a unit. It makes no detachments for reconnaissance, which is the duty of the elements in rear. (But see March Outposts.)

The point is a feeler to the front. It must remain on the road. It does no flank reconnaissance other than flank observation to the limit of vision from the road. It does not *halt* to investigate buildings, enclosures or woods along the route, but pushes resolutely forward. It observes everything within sight from the road and exercises such precautions as it can while continuously advancing, but it does not leave the road to investigate and does not halt until compelled to do so by the fire of the enemy.

On approaching a turn or crest in the road which limits view to the front, the leading men (scouts) move up to the turn or crest and search the country to the limit of vision to make reasonably sure that it contains no enemy before the rest of the point exposes itself. This procedure is known as “advance by bounds.” While the point must maintain a continuous advance and a prescribed distance in front of the fraction in rear, yet a certain variation of gait is permissible, and slight variations in distance from the party in rear.

The point makes a hasty examination of any bridges along the route to note any evidence that they have been tampered with by the enemy, or are for any other reason unsafe. If so, word is sent to the rear.

Any information concerning the enemy is sent to the advance party by signal or messenger.

Civilians are not allowed to go ahead of the point.

During the march the point guides upon and maintains its distance from the advance party. It halts upon signal from the rear or when the advance party halts. At every halt the point forms as a march outpost. (See March Outposts.)

If fired upon by the enemy the point promptly deploys, takes cover and finds out where the fire is coming from. If from the front, or nearly from the front, the point promptly attacks, and if possible drives off the hostile party and continues the march. If the enemy is in too great strength for the point to drive him out, the advance party deploys and attacks. If the hostile fire is from the flank the point should not leave the route of march to attack. It deploys on or near the road and opens fire. If this is not sufficient to drive off the enemy an attack is made by the advance party, the point remaining on the road to oppose any hostile advance along it. As soon as the hostile fire is silenced the march is promptly resumed.

The commander of the point sends to the commander of the advance party any information of importance; especially as to the enemy, his position and estimated strength. If any portion of the route is being subjected to artillery fire the point makes a detour around it and returns to the road.

Commander. The commander of the point of an advance guard occupies an important and responsible position. Except in a small command, the responsibility is greater than should ordinarily be borne by the corporal of the squad which forms the point. When this is the case a sergeant should be detailed as commander. The

section leader of the leading section, one squad of which forms the point, should not be separated from the bulk of his section. The platoon sergeant of the leading platoon, who has no regular command, is a good man to command the point.

The start. The advance party commander issues orders in the usual form to his command. He designates the troops for the point, their commander, the route to be followed, and the distance at which the point is to precede the advance party. These orders are issued at the head of the advance party, formed on the road, ready to march. They may be issued previously, if a favorable opportunity is afforded. The advance party being in the position from which it is to start, the commander orders the commander of the point to take charge of it and move out.

The commander of the point marches his men to the front until at the prescribed distance in front of the advance party, where he halts them and issues his orders. These would be in about the following form:

(1) "The enemy is reported to have two companies of militia in Oakmont, about 9 miles west of here. He will probably have patrols in front of the town on our



PLATE 372.

route. We have an outpost on that ridge yonder. Our battalion marches this morning to seize Oakmont by this main road through Cedar Springs and Pine Ridge. (The corporal points out the route on his map, if he has one.)

(2) "Our company forms the advance guard, our platoon the advance party. We are the point and will precede the advance party by 200 yards—the distance we now have.

(3) "We will now take our positions for the march. (See Fig. 1, Plate 371.) Each man must keep the man in front of him in sight at all times, preserve his distance from him, keep himself concealed, and transmit any signals either from the front or rear. Wilson (No. 4, rear rank), take the left of the road here. You are the getaway man. Watch for signals from the rear. The corporal then moves along the road, posting his men in succession. To the leading men—the scouts—he gives orders as follows: . . . Jones, march on the right of the road. Observe to the front and right. Signal to me if you see any signs of the enemy."

The Advance Party.

The advance party is the sub-division which follows the point. In a small advance guard it may be a rifle platoon of infantry. In a larger advance guard it may be a company, in which case one platoon of the company would march some distance in front as a point.

Duty. The advance party backs up or supports the point, which is a part of it. In case of contact with the enemy it begins the combat, attacking small hostile forces, or holding larger ones in check until the units in rear can prepare for attack or defense. In case of casualties (losses) in the point they are replaced from the advance party.

The special duty of the advance party is reconnaissance or patrolling. It reconnoiters the country on either side of the route of march, and in case of contact with the enemy it finds out his strength and position, especially the positions of his flanks.

Formation. The advance party or the leading platoon of the advance party is in an exposed position, and should march in a formation which will allow it to deploy rapidly in case of meeting the enemy. A good formation is column of twos or section columns, with one file on each side of the road. File closers march at the head and tail of the column, not alongside.

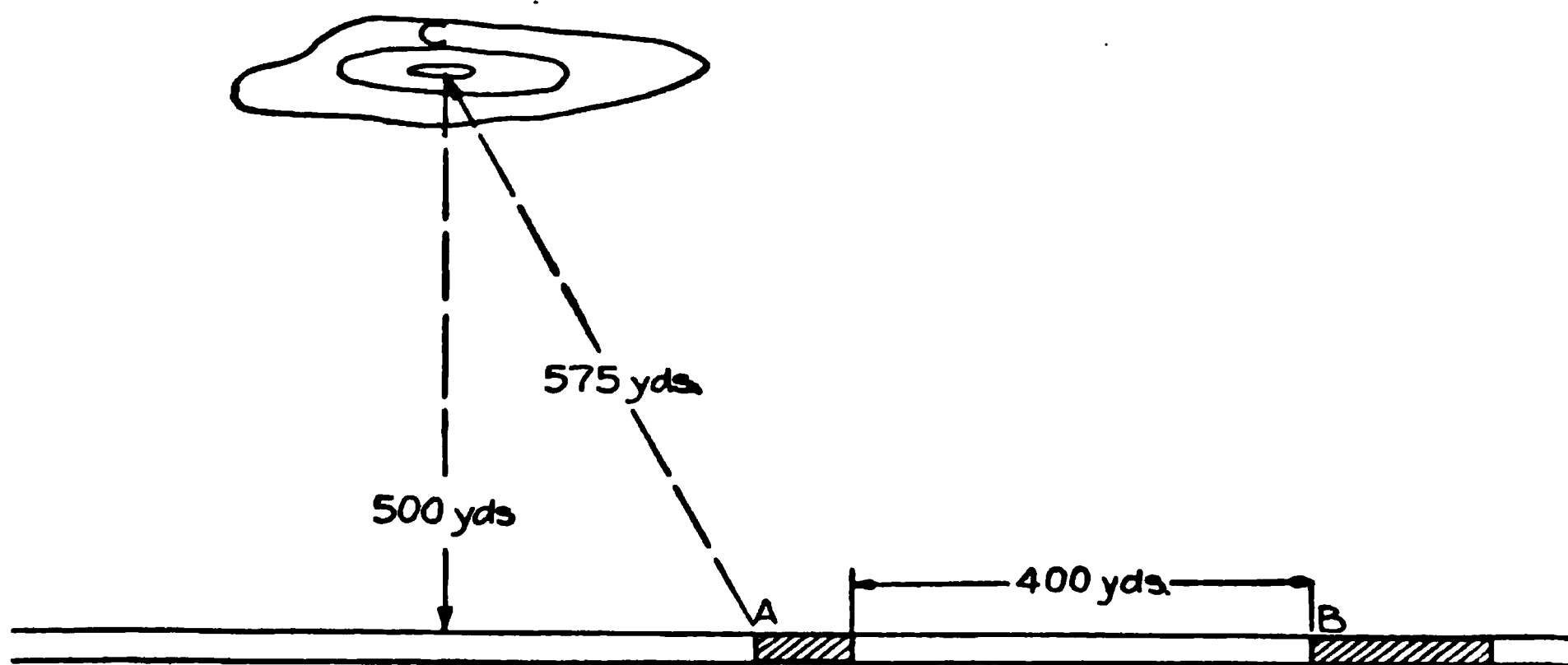


PLATE 373.—Flank Patrolling.

A, Advance party.

B, Support.

C, Locality to be visited by patrol.

Patrolling by the advance party. As the advance party usually includes only foot troops it can send patrols only a short distance to the flank. These patrols should not march through the fields parallel to the column. This would be very exhausting, and the men would not be able to keep up with those on the road. It is of course useless to send out a patrol which can see nothing that cannot also be seen from the route of march. But every suspicious locality to the flanks from which hostile rifle fire might be directed at the column should be investigated, and high points affording a better view of the country to the flanks should be occupied if they are not too far out.

The usual method of flank reconnaissance is to select the natural points of observation, and to send patrols from the column, by the shortest route across country to such points. The patrols remain in observation as long as directed, until the reserve has passed or until the head of the main body is opposite. They then return to the column by the shortest route and report to the first officer they meet. They rejoin their own command during a halt (especially the long halt at noon), or if very far to the rear, at the end of the march.

The strength of such patrols varies with the distance to which they are sent, the time they are to remain out, the probability of encountering the enemy and being

compelled to fight, the necessity for sending back messages, etc. Two men would be the least and it would seldom be necessary to send more than a squad.

The duty of these patrols is to observe and reconnoiter for any signs of the enemy, to signal or send a messenger in case important information is gained, to fire upon and disperse small parties of the enemy, and to give prompt warning and delay the advance of any larger party.

The unit must never be halted for the purpose of sending out patrols, though the regular halts may of course be used.

Men in the columns are detailed to watch for signals from the patrols.

The patrols are organized and their leaders designated in advance, and they are then sent out successively.

The officer sending out the patrol tells the leader where to go, what route to follow (if necessary), exactly what to look for and to do, signals or messages expected, when to return to the column, and when to rejoin.

The orders to a flank patrol given by the advance party commander would be about as follows: "Jones, see that wooded hill? (pointing). Take your patrol there, reconnoiter the woods, and see the terrain beyond. Fire on any of the enemy who approach the column. If they are in force, delay their advance, signal back and send a messenger. Remain there until the next halt (until such time, until the tail of the reserve has cleared this point, etc.). Then return to the column and report to the nearest officer. Rejoin us at the next halt (at the end of the march, when directed, etc.). Move fast but don't tire your men. Go at once."

The patrol leader conducts his operations in accordance with the principles of patrolling (see course in Scouting and Patrolling), except that concealment is of less importance than in the case of an independent reconnoitering patrol.

The officer who sends out the patrols must constantly view the country through which he is passing, select the favorable points which afford a view of all suspicious terrain, and send patrols by the shortest line to such points. For example: If there be a crest a few hundred yards from the road, affording a view of a wide valley on the flank, an occasional patrol sent to this crest would make it impossible for the enemy to occupy or approach it without being seen.

If there be branch roads leading to the flank, these are of course utilized in sending out flank patrols.

Woods, buildings and inclosures must be actually visited and examined, as it is of course impossible, by seeing them from the outside, to make certain that they are not occupied by the enemy.

If there be roads parallel to the route of march, on either flank, and at a suitable distance, patrols may be sent along such roads. These patrols should occasionally rejoin, report and be relieved by fresh patrols.

In passing through a wood or agricultural crops which might afford concealment for the enemy (such as corn in the shock), the advance may be preceded by a line of skirmishers at extended intervals, as far to the flanks as necessary to discover any enemy in a position to fire on the column. The visibility in such terrain is always restricted, so that fire from any considerable distance is not to be expected. The intervals between scouts should be such that each can see his neighbors.

In passing a defile its flanks should be thoroughly reconnoitered before any considerable body of troops is allowed to enter. The point pushes through promptly, and reconnoiters the outlet and the terrain beyond. The advance party sends patrols to both flanks.

Patrolling of this kind by foot troops can seldom extend more than 400 to 500 yards from the route of march. These patrols afford very little protection to the advance party itself, but they do serve to protect the larger bodies in rear.

More elaborate measures for the protection of the flanks of a large unit would require a flank guard or some mounted men sent from the support.

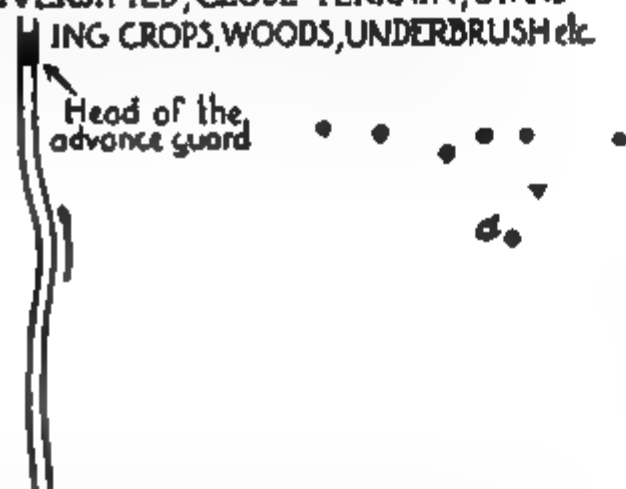
As the advance party loses strength by reason of sending out a number of patrols, it is reinforced from the support.

PATROL TACTICS

SECURITY PATROLS — OPEN WARFARE

FLANK PATROLS ON THE MARCH.

FIG. 1 FLANK RECONNAISSANCE IN DIVERSIFIED, CLOSE TERRAIN, STANDING CROPS, WOODS, UNDERBRUSH etc.



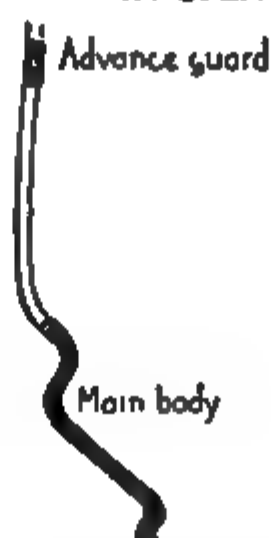
Flank patrols reconnoiter on a broad front at such intervals as necessary to maintain contact. As progress is more difficult than on the road the patrols are replaced as necessary.

FIG. 2 FLANK RECONNAISSANCE IN OPEN TERRAIN



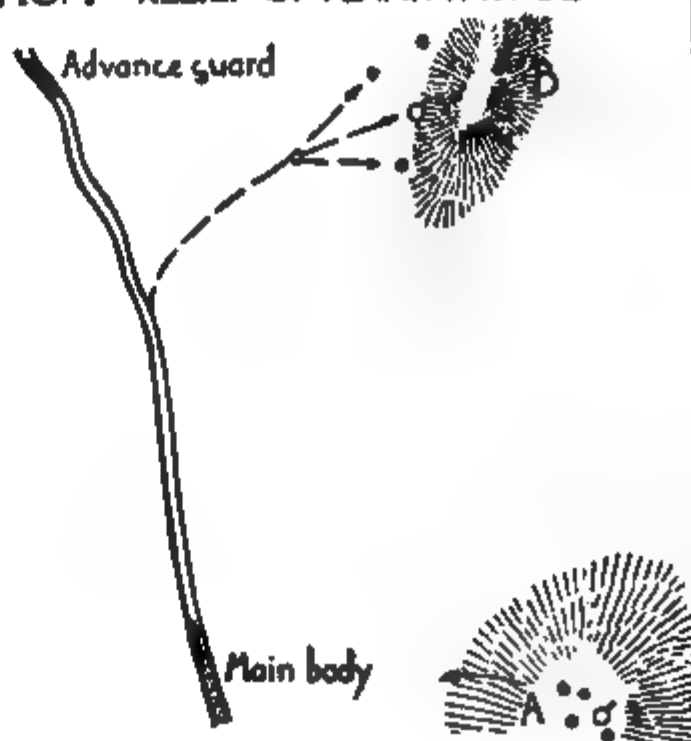
Patrols are sent to the flanks for observation from commanding points of terrain which cannot be seen from line of march.

FIG. 3 CONDUCT OF FLANK PATROL IN OPEN TERRAIN



The patrol leader on the locality, takes a position. The patrol safeguards him from surprise signals.

FIG. 4 RELIEF OF FLANK PATROL



Patrol has been sent to hill A. As the advance party approaches hill B a new patrol is sent to that locality. When it has taken station the patrol at A is relieved and rejoins the reserve or main body.

Encountering the enemy. Combat. Combat is an important duty of the advance party. The conditions under which the enemy may be encountered are so various that very general rules only can be stated. Each situation must be estimated. The commander must constantly observe the terrain through which he is passing, note the localities which might be occupied by the enemy, and decide in advance what action he will take. He must be prepared to deploy to front or either flank.

The general rules, "Keep moving until compelled to stop," and "If in doubt, attack," will be applicable to the conduct of the advance party, whose mission is always aggressive, unless otherwise ordered. Its duty is to clear the route of any enemy who attempts to delay the march. The advance party is too small to commit the entire force to a general engagement, contrary to the will of the commander. A prompt attack will certainly be the quickest and usually the only way to brush aside a small hostile force, which naturally will not retire until there is at least the threat of an attack. If the enemy be present in considerable force an attack will usually be the best way to compel him to show his strength and position. If he is too strong for the advance party to drive him out unaided, this can often be determined only by an attack, it will soon become evident, and in this case the larger units in rear will take a hand. Nevertheless, the advance party must not deploy for combat every time that a few shots are heard, as this would delay the march.

If the point encounters the enemy and attacks, the advance party halts and takes cover, behind a crest, at the sides of the road, etc., but does not deploy unless evidently necessary for safety. If the point drives back the enemy, the march is resumed. If it is unable to do so the advance party reinforces it. If this proves insufficient, additional force is employed from the support.

If fired on from the flank, the advance party deploys in the direction of the attack, opens fire and advances on the enemy if necessary. But before uncovering the front by such an attack, word should be sent to the rear that the support may take the necessary measures of security. The point remains to cover the road, and a strong combat patrol should be placed on the exposed flank of the advance party.

If it be evident that a strong position bars the advance, the advance party takes cover, deploying if necessary, and sends patrols to locate the flanks of the position. The patrols should be made strong as they may have to drive back hostile patrols. They may have to draw the enemy's fire to obtain this information. If it appears probable that the hostile position consists of a few isolated groups on a wide front, rather than a position strongly held, a frontal attack will probably compel the enemy to retire.

Frontal attacks will be the rule for all combats of the advance party. They are more direct, can be launched more quickly, and are usually quite as effective against a small delaying force as an enveloping action. The latter is seldom attempted, especially as the advance party is usually not strong enough for such an attack.

The attack is made according to the methods we have discussed under Offensive Combat.

After the attack the advance party is reorganized. As soon as the enemy breaks the advance should be resumed, the advance guard pressing strongly upon the retreating forces. If the advance party has been disorganized or scattered during the attack, time will be saved by pushing forward a new advance party from the support. The former advance party takes its place in the support.

If its advance be checked by superior fire of the enemy, the advance party should seize a position favorable for defense and cling to the ground, covering the front of the column. It should be promptly reinforced and the position held. As a forward movement usually means superior strength, and as an advance guard and each of its parts can be promptly reinforced by the advancing troops in rear, a withdrawal should seldom be necessary.

The advance guard attacks. If itself attacked it resists stoutly. Combat by an advance guard may result from:

- a. Guarding the main body against surprise.
- b. Reconnoitering.

- c.* Pushing back reconnoitering forces of the enemy.
- d.* Pressing upon delaying forces of the enemy.
- e.* Pursuit of a defeated or retiring enemy.
- f.* Checking the enemy's advance to give the main body time to prepare for action.
- g.* Seizing and holding a position to cover the passage of the main body through a defile or across a bridge.
- h.* When the enemy is encountered in force on the defensive, holding him in position and reconnoitering his lines while awaiting the arrival of the main body.

It is a rule of combat that before attacking it is well to have information as to the strength and position of the enemy. This rule is less applicable to advance guards than to any other forces. If the advance guard is unduly cautious in attacking, the advance is bound to be delayed. A delaying force of the enemy usually will not withdraw until an attack is made, or until it is evident that one will be made.

The attack will be started by one of the leading elements of the advance guard. It will be promptly reinforced by all following elements, including the main body if necessary. If the enemy is dangerously strong that fact will usually soon become apparent—while there is still time for retreat, and ample force to cover the withdrawal of units already engaged. Even if it be necessary to sacrifice the leading elements rather than commit the entire force to a combat with a greatly superior force, the loss will be relatively small.

The Support.

The duties of the support are to reinforce the advance party, patrolling beyond the limits possible for the advance party, removal of obstacles, temporary repair of roads and bridges, and combat. To perform these duties the support may have mounted men and special troops (engineers, pioneers, intelligence personnel, machine guns, etc.) attached to it.

The Reserve.

The reserve is the rearmost and largest fraction of an advance guard. It includes all troops not specially assigned elsewhere. Its special duties are to reinforce and support the elements in front of it, especially in case of combat.

Leading troops. Leading troops are a small detachment sent ahead of a column in situations where a regular advance guard is not necessary—especially in a retreat or movement to the rear.

Distances between fractions. The distances between the fractions of the advance guard, and between the advance guard and the main body, depend chiefly on the size of the units. Other considerations will be the terrain (as to cover, concealment, range of vision and field of fire), the enemy and the resistance he is likely to offer, etc.

The distance between two successive fractions should be sufficiently great to permit the fraction in rear to deploy for combat under protection of the one in front. It should not be so great that the smaller fraction in front might be overrun by the enemy before it could be supported from the rear.

Experience indicates that under average conditions in fairly open country the distance between two successive fractions should be approximately equal to the usual frontage of deployment of the infantry of the larger (rearmost) of the two units. The application of this rule gives the following distances:

Between a platoon and a squad in front of it.	150 to 250 yds.
Between a company and a platoon in front of it. . . .	300 to 450 yds.
Between a battalion and a company in front of it. . .	400 to 600 yds.
Between a regiment and a battalion in front of it. .	800 to 1200 yds.

These distances may be taken as a guide. Distance as here given means between the tail of the forward fraction and the head of the one next in rear.

Distances are greater in open country affording a good view and field of fire than in close country; greater if machine gun, howitzer or artillery fire is to be feared, than if rifle fire only; greater if there is a possibility of attack by cavalry.

In darkness or fog distances should be reduced. If the mission of the command is aggressive, if the enemy is known to be weak and an attack is little feared, if it is desired to draw the enemy into an engagement, especially in pursuit of a defeated force, distances are reduced to the least that safety permits.

The start. A small command is usually formed in column on the road before starting. Thus, the advance guard takes its position at the prescribed distance in front of the main body. Here the advance guard commander issues his final order for the march. The support then moves out to the prescribed distance, where it halts, the commander issues his orders, and the advance party then moves out, etc. When the fractions of the advance guard are in their proper positions each signals "Ready" to the one in rear. When all are ready the march is begun either at a stated time, or on the signal, "Forward" from the head of the main body, which signal is relayed to the units in front.

Regulating the march. Subdivisions of an advance guard which are smaller than a battalion usually take their distance from and guide on the larger body next in rear. This is expressed in orders by saying: "The advance party will *precede* the support by 400 yds."

However, the larger body in rear must also take steps to maintain proper distance. If the fraction in front is delayed or compelled for any reason to halt, the fractions in rear should halt in succession before distances have been reduced below what is safe.

Contact (intercommunication). It is of course important that there should be close contact between the parts of an advance guard, so that messages and orders may be transmitted back and forth. When the elements are in sight of each other simple arm signals may be used. As a rule only very simple signals such as, "Halt," "Forward," "Enemy in sight," should be sent in this manner. Runners are used for longer messages. When communications are sent longer distances, as in a large advance guard, motor-cycle or bicycle couriers, radio and other mechanical means are used.

Turns and crests in the road, woods, etc., will often cause the different fractions to lose sight of each other. When this is the case connecting files are used. These consist of single men or two men distributed at intervals in the open space between two units to relay signals back and forth. The connecting files are placed at distances of 100 to 200 yards depending on the terrain, etc. Each file should keep the files in front and in rear always in sight, and should watch both of them for signals. At night the connecting files are placed much closer together, 5 to 10 yards apart if necessary. Connecting files should never give signals on their own authority, but should merely transmit signals received.

Connecting files are sent forward by bodies in rear into the open spaces between them and the bodies next in front.

At the head and at the tail of each body one or two men are detailed to watch for signals from the front or rear and, when necessary, from patrols on the flanks.

It will be plain that only very simple messages should be relayed through connecting files, as any complicated message would be very apt to become confused.

Halts. March outposts. The advance guard halts when the main body halts, usually at a stated time each hour. On halting the troops should move to the sides of the road, leaving the route clear.

The point, unless already in a favorable position, continues the march for a short distance to a locality favorable for observation to the front and flanks. Two or three men, usually including the scouts, are posted as a temporary outguard, and other observers may be sent short distances to the flanks if better observation is thereby obtained. The remainder of the point take cover on or near the road. The commander of the point posts himself where he can see both his lookouts and the head of the advance party, or the lookout at his head.

The advance party halts and takes cover at the nearest suitable place. Patrols out to the flanks remain in position as outguards. The commander inspects the terrain and sends out such additional outguards as he considers necessary. He posts men to watch for signals. He goes to a position near his halting place which is favorable for observation and inspects the terrain through his glasses, studies his map and makes plans for reconnaissance upon resuming the march.

A halt is a favorable time for sending out flank patrols, and the various unit commanders should take the opportunity. Some of these patrols may rejoin when the march is resumed, others may remain out as ordered.

Men designated to watch for signals from front, rear or flanks, take favorable positions and continue to perform these duties during the halt. Connecting files take posts so as to establish continuous chains of visual contact between all fractions. They may go a short distance from the road if necessary.

The support and reserve may send out such flank patrols as their commanders deem necessary. These fractions take cover at the nearest available place on halting, prepared to deploy promptly in case of attack.

If the halt has been made for the purpose of repairing the route, pioneer or engineer troops proceed at once with their tasks, tool wagons or bridge trains being brought forward if necessary. The advance party, and in a small advance guard also the support, continue beyond the locality at which work is to be done, establishing march outposts and selecting a defensive position to protect the operations.

On the final halt, at the conclusion of a day's march, march outposts are placed with special care, and remain in position until the regular outpost is placed.

Posts of commanders. The commander of an advance guard or of and part of it (advance party, support, etc.) may take post anywhere *within his own proper command*. He is not tied to any one position but goes where necessary. The usual post of each commander is at the head of the largest fraction of his own command. For example, the advance party commander usually marches at the head of the advance party itself, but he may join the point if he thinks it necessary. He should not go to the rear.

When a commander leaves his usual place he should designate a responsible officer or non-commissioned officer to remain there and receive any orders or messages intended for him. This subordinate should always know where his commander can be found, and should send important orders or messages on to him.

The presence of a higher commander does not relieve a subordinate commander of his own proper responsibilities. The commander of the advance party, for example, carries out his duties in the same way whether or not the support commander is with him, and the higher commander should not interfere except when his subordinate makes a plain mistake.

Orders.

The commander of the advance guard, and of each successive sub-division issues the necessary march orders to his own command. These orders do not go into small details as to the duties of the subordinate bodies. For example, the order of the support commander divides his command into two bodies, the support proper and the advance party, and gives the distance between these two bodies. It does not prescribe the size of the point, nor the distance at which it shall precede the advance party. These matters are left to the judgment of the advance party commander.

Advance guard orders for small units are usually issued verbally. Following is an example of a verbal order for a company acting as a support, which shows the items usually included in such an order:

"Enemy is reported mobilizing a local infantry battalion at LITTLESTOWN and to have one battalion of regular infantry there guarding the town and railroad. Further reports indicate that he is mobilizing a local infantry brigade at NEW OXFORD (nine miles north of LITTLESTOWN) and intends to send this force to reinforce the garrison at LITTLESTOWN.

"Our mounted patrols report having encountered numerous aggressive enemy mounted patrols along the general line SILVER RUN—GREEN VALLEY SH. These patrols were driven off and withdrew to the north.

"Our brigade, reinforced by one battery of light field artillery, 17 cavalymen, and a motorized ambulance company, marches at 7:30 AM to-morrow to capture and hold LITTLESTOWN.

"Our battalion, reinforced by one howitzer platoon, and the pioneer platoon, constitutes the advance guard of the brigade.

"This company will constitute the support under my command and will precede the reserves at 440 yards marching via MAYBERRY—road junction 714—ARTERS MILL—PLEASANT GROVE SH. With the support will march one squad from the intelligence platoon.

"The remainder of the battalion constitutes the reserve.

"Lt X (commanding 1st Plat); your platoon will constitute the advance party, and will precede the support by 250 yards.

"Lt Y (commanding the 3rd Plat); detail one man to watch for signals from the rear.

"First halt to be at 8:15 AM. Thereafter 20 minutes after the hour. March to be resumed on the $\frac{1}{2}$ hour after all halts.

"This company will assemble in column of squads, order of march, 1st, 2nd and 3rd Platoons, head of column at BEAVER CREEK at 7:10 AM.

"Full field equipment, less packs, will be carried. An officer from Bn headquarters will take charge of the packs. Have them ready for his disposal at 6:30 AM at company kitchen.

"Our ammunition wagon will be at the tail of the support.

"Messages to me at the head of the support."

REAR GUARDS.

Introduction. A rear guard is a covering detachment which marches at the tail of a column in a retreat, between the column and the enemy.

The best understanding of a rear guard is obtained by imagining an advance guard which has executed "to the rear, march." The point becomes the rear point, the advance party becomes the rear party. The larger bodies, support and reserve, have the same designation as in an advance guard.

A rear guard is characteristic of a retreat, and its duty is to cover the retreat and prevent the enemy from attacking the main body or delaying its march. If the enemy pursues vigorously the rear guard accomplishes its purpose by a series of delaying actions. It retires from each delaying position to another in rear (in the direction of march) in time to avoid becoming seriously engaged, and thus perhaps suffering heavy losses or complete rout itself, or compromising the retreat of the main body if the latter is compelled to reinforce the rear guard.

If the main body is delayed from any cause, the rear guard must hold the enemy in check at a safe distance until the march can be resumed.

A rear guard thus resembles an advance guard in that it consists of a number of fractions or parties progressively increasing in size from the enemy towards the main body, and that it is the function of each of these parties to reinforce or cover the retirement of the one next towards the enemy if necessary. Like an advance guard a rear guard marches by the same route as the main body.

A rear guard differs from an advance guard in that it marches *away from* the enemy, and that it is purely defensive, and does not attack except when attack is necessary as a measure of defense. The rear guard does not seek to defeat the enemy, but only to delay him to prevent his interference with the march. It endeavors to avoid being drawn into a decisive engagement.

A rear guard is usually unnecessary in a forward march except where there is danger of attack from rear as well as front. In a forward movement the rear organization will detail an officer and a few men to march in rear, prevent straggling, etc.

Except as noted in the following pages the formations and conduct of a rear guard are similar to those of an advance guard.

Strength and composition. The strength of a rear guard will be approximately that of an advance guard in a similar situation, that is, from one-twentieth to one-third of the total strength.

If there be no pursuit or no enemy near the rear guard may be small. If the enemy is pursuing vigorously and the main body is disorganized as a result of defeat, all available troops still in hand should be used to check the pursuit. In this case the only limit to the strength of the rear guard is the number of troops available.

The considerations which decide the strength of a rear guard are similar to those in the case of an advance guard, with one important exception. The main body is moving away from the rear guard instead of towards it. Accordingly, the rear guard ordinarily cannot count on reinforcements and should be made strong enough in the beginning to accomplish its mission.

If the rear guard be too weak it cannot accomplish its mission of holding the enemy in check. On the other hand if it be too strong, there is danger that a large proportion of the entire force may become involved in a decisive engagement with the enemy.

If the retreat is apt to be delayed by obstacles, by the activity of the hostile cavalry, or by any other cause, there will be more occasion for delaying action, and the rear guard should be stronger than where the march is not apt to be delayed.

Like an advance guard or any other detachment which may have to fight, a rear guard will consist chiefly of infantry. But the most important duty of a rear guard is *delaying action*. It is difficult to withdraw infantry from a fight, because of its low mobility or *speed*. Cavalry is able to withdraw much more easily, and so if there be any cavalry available it can be used to good advantage in a rear guard.

Machine guns and artillery are also especially useful in delaying the enemy as by their fire they can cause him to deploy at long range, and can easily withdraw themselves. Accordingly these weapons are used to the fullest extent to delay a pursuit. But it will seldom be necessary to attach artillery to a *small* rear guard. Because of its long range it will be quite as useful and much safer if at the tail of the main body.

Distances. Regulation of the March.

The distances between fractions in the case of advance guards may be taken as a guide for rear guards. Distances should not be less, and may often be greater, than in the case of an advance guard of the same size. For example, if the distance between the main body and the reserve of the advance guard be 1000 yards, this distance might be 1500 yards or more in the case of a rear guard. Distances in a rear guard are more variable than in the case of an advance guard.

The rear guard should not be too far separated from the main body to be reinforced in case of emergency. But on the other hand it is often more dangerous to have it too close, since if the rear guard is forced back the main body might become involved. Rear guard distances should be sufficient to permit of a reasonable delay of the main body without danger of the rear guard being driven too close. If a delay of the main body is probable the distance between it and the rear guard should be increased, and might be twice the distance for an advance guard, but there should seldom be a corresponding increase of distances between the fractions of the rear guard itself. What is of more value than distance is at least one good delaying position between the rear guard and the main body, and the rear guard, often moves by bounds from one such position to another. In this case a prescribed distance cannot be maintained, but the minimum necessary for reasonable security should not be reduced. Rear guard distances will be affected by the terrain and the conduct of the enemy to a greater degree than advance guard distances.

The halts of the rear guard will seldom be at exactly the same instants as those of the main body. Knowing the times at which the regular halts take place the rear guard should halt in a position favorable for defense, whether this requires halting a little earlier or a little later than the main body. For example: The rear guard should halt on the reverse slope of a ridge, rather than exposed on the slope toward the enemy; it should halt just inside the edge of a wood if not too distant, rather than in open terrain beyond the wood. The fractions of the rear guard should halt in the best available covered positions favorable to the performance of their various functions (observation or defense) even if this causes a slight variation in any prescribed distances. This procedure should be guided by common sense. No

Fig. 1

Fig. 2

PLATE 375.—Use of Flank Patrol.

fraction should close up so that it does not protect the fraction in rear, nor halt at such a distance as to be unduly exposed. In very close country, and especially during a night march, the distance between the main body and the rear guard should be reduced.

If there be no pursuit the rear guard may be directed to follow the main body at a certain distance. It may be directed to follow "delaying the enemy," or to march at a certain hour. In the case of a large rear guard the supreme commander may merely inform the rear guard commander of the hour at which the main body will march, leaving the conduct of the rear guard entirely to him.

When there is no interference from the enemy the reserve of the rear guard guides on the main body and the smaller bodies in rear guide each on the one in front.

The rear guard commander should keep himself informed as to the progress of the main body, so that he may not risk unnecessary encounters with the enemy.

Reconnaissance. Patrolling.

As it moves away from the enemy the patrolling of a rear guard is simpler than that of an advance guard. The chief concern of the rear guard is to maintain contact with the larger pursuing forces in order to be informed at all times of their location. There will usually be little difficulty in maintaining contact with the enemy following the same route. But it is also essential, especially when the rear guard is delayed by the necessity for opposing the enemy, to watch the flanks that no enemy may slip by on the flank. Accordingly, the reconnaissance of a rear guard is usually conducted on a broader front than that of an advance guard.

While engaged in combat the rear guard should send patrols far to its flanks to guard against possible turning or enveloping movements of the enemy, rendered likely by reason of the delay.

The rear party, unlike the advance party, sends out few patrols. Patrols sent out from the rear party at right angles to the line of march would at once be left behind, and would be unable to rejoin the column. Accordingly, such flank patrols are sent out by the support, the reserve or even the main body. If a patrol from the support can reach the designated position, accomplish its mission of observation, and return in time to join the rear party, the patrol is sent from the support. Otherwise it will be necessary to send it from the reserve or the main body.

For example, referring to Plate 375: *B* is a favorable point of observation on the flank of a line of a retreat, from which a view may be had of the terrain on the far side of the woods and for a considerable distance beyond (toward the flank). It is a necessary measure of security to send a patrol to observe from this point. It is plain that if this patrol were sent from the head of the rear party when it had arrived at *A*, on the road opposite *B*, the patrol would hardly reach *B* before the rear point would have passed *A*. Allowing time for observation and return to the road, the patrol would find itself far behind the point and in danger of being cut off. Also any information it might obtain would be rather late to be useful. The point *B* is too far from the route of march to be occupied by a patrol from the rear party, and the situation indicates why a rear party can do little in the way of flank patrolling.

But if the patrol were sent from the head of the support it would have time to go to *B*, satisfy itself that no enemy was in sight or see any hostile troops dangerously close and return to the route of march in time to join the rear party and report the information (Fig. 2). Accordingly, the support commander, if he properly estimates the situation, would send out this patrol as he reached *A* or sooner.

DELAYING ACTIONS.

Delaying actions to hold back a pursuing force are the most important duty of rear guards. Because it is very difficult to withdraw infantry troops after they are once engaged in combat, the enemy should be delayed by the use of cavalry and long range artillery and machine gun fire whenever practicable, and the infantry should be committed to action only as a last resort.

The best method of delaying the enemy is to force him to deploy and make dispositions for an attack at as great a range as possible, by machine gun and artillery fire especially. Before the attacking troops have advanced to decisive range of the position held by the delaying force the latter rapidly withdraws to another favorable position in rear where, if necessary, the same tactics are repeated.

Always the delaying force tries to avoid being drawn into a serious engagement. To do this infantry should withdraw as soon as the attacking infantry arrives within about 800 yds. of its position.

The delaying force usually deploys on a rather wide front, with extended intervals, and opens fire at relatively long range, 1000 to 1200 yds. or even more, if possible. The main object is to compel the enemy to halt and deploy for attack as far away as possible, thus causing a delay in his advance. The defender should

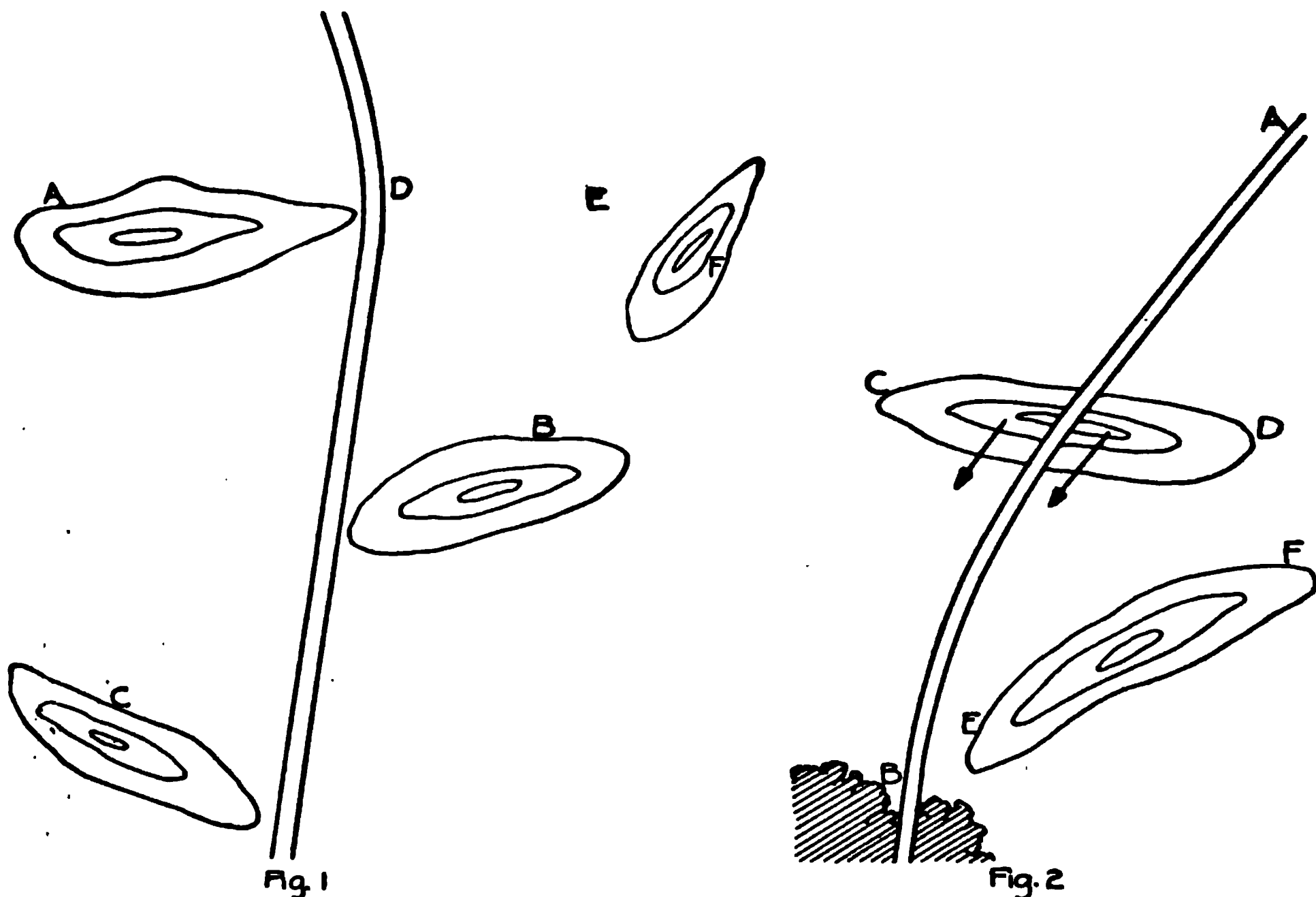


PLATE 376.—Delaying Positions.

then develop a strong frontal fire to delay the attack, but as soon as the attacker is able to advance to about 800 yds. the defender withdraws.

In Fig. 1, Plate 376, a delaying force might occupy a position such as *ADEF*, squarely across the line of retreat (the road). But in withdrawing from this posi-

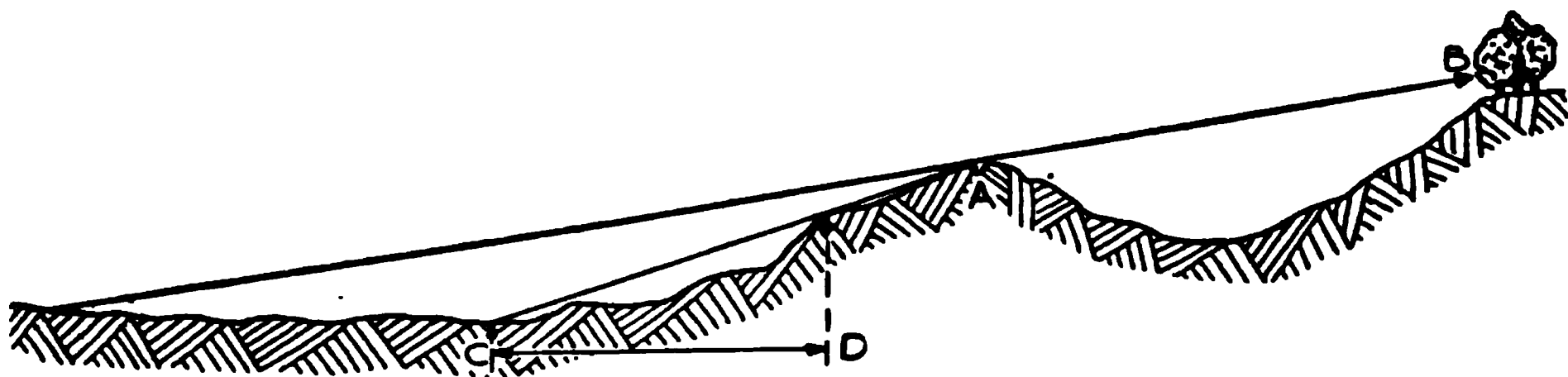


PLATE 377.—Position of Firing Line in Delaying Action.

The firing line is at *A* on the topographical crest. A background for *A* is formed by trees at *B*. There is no field of fire from *C* to *D* but this is unnecessary, as the force will withdraw from *A* before the attack reaches *C*. The force at *A*, retreating, are almost, if not quite, sheltered from hostile fire by the ridge, until they reach the next cover at *B*, provided the withdrawal from *A* is not unduly delayed.

tion the troops would retreat straight to the rear, and it would be impossible for the reserves to cover this retreat without firing on their own troops. If a smaller detachment were placed on the hill *F* it could probably cause the enemy to deploy for attack. The retreat of this force could be covered by another detachment on the hill *B*, and this in turn by still another force on the hill *C*.

Another very important matter in a delaying position is a good "get-away" or a covered line of retreat. If the position be on a crest of a ridge it has this advantage, as can be seen in Plate 377. Other good localities are the front edges of woods or villages, or the outlets of defiles. Vegetation which conceals the troops is always a great advantage, as is also an obstacle in front of the position, especially an unfordable stream.

The pursuer may also be delayed by destroying the bridges or blowing holes in the roads over which he must pass.

Plate 378 shows a terrain ideal for delaying actions by a rear guard. A force is retreating from *A* to *G*. A portion of the rear guard deploys in the edge of the woods at *B* and delays the enemy in crossing the stream. It then has a good get-away through the woods and behind the crest *D*. If necessary a detachment is



PLATE 378.—Ideal Conditions for Deploying.

deployed at *C* to cover the retreat to *D*. The troops from *D* withdraw to the village, and from here cover the retreat of the detachment from *C*. The village (*E*) is a good delaying position, and serves to screen the troops as they retreat across the bridge *F*. The high ground *GG* is then occupied to oppose the enemy's passage of the stream. If the enemy, instead of attacking, should attempt to "turn" or march around these positions he would probably lose even more time.

It is the duty of the rear guard commander to select in advance suitable positions for delaying actions, to be occupied if necessary.

Orders for delaying action are usually brief, verbal and fragmentary. They are issued to the various elements to meet each situation as it arises.

For example: The instructions to an officer commanding a portion of the rear guard in a delaying action might be about as follows: "Lt A, you will take up a position at — for the purpose of delaying the enemy's advance (or to cover withdrawal of such troops from such place). When you are in danger of being cut off, break off the engagement and retire via — to —, where further orders will be given you. Messages will reach me at —."

SECURITY. OUTPOSTS.

Introduction. Outposts are the means used by a military force to provide for its own security when it is halted or stationary, for example when it goes into camp at the end of a day's march.

When a force is in line of battle or occupying a defensive position such as we have described earlier in this course, the troops in position are prepared to meet the enemy's attack, and they protect the other troops who are in rear, in reserve. An outpost is a measure of security which is used during a temporary halt, when it is possible but not very probable that the enemy will make an attack in force. If it was very probable that the enemy would attack we would take up a defensive position at once. But in any case we cannot neglect reasonable measures of security and so an outpost should always be placed to cover a force which is halted, if there is any possibility that the enemy is near. Even if the enemy does not attack in force he may send patrols to find out where we are, how many men we have and

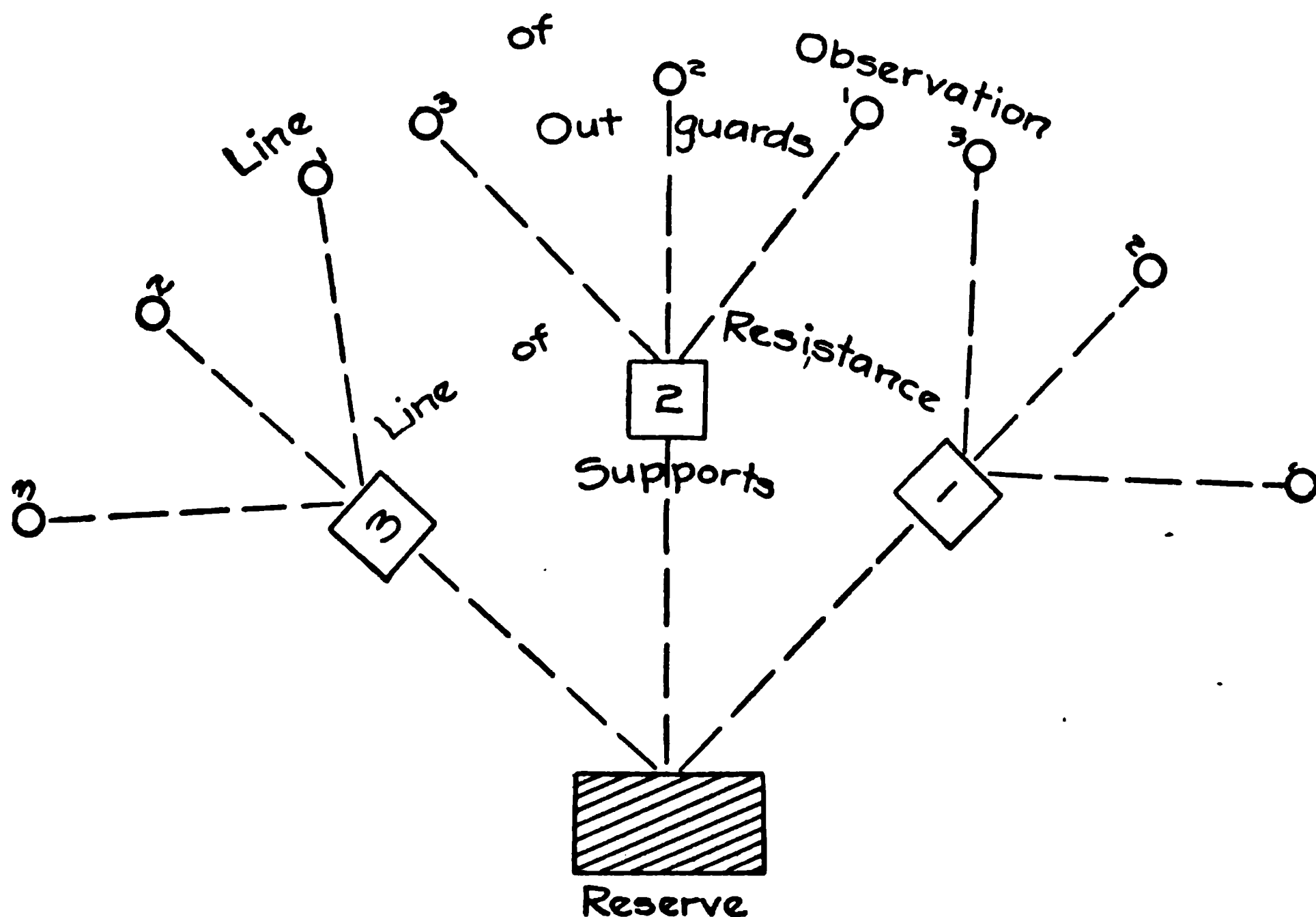


PLATE 379.—Diagram of Outpost Dispositions.

what we are doing. And if these patrols have a chance they will create a disturbance by firing into the camp and thus preventing the men in the main body from resting or sleeping. It is the duty of the outpost to keep such patrols at a safe distance so that they cannot gather information or disturb the troops in their camp.

The measures adopted for the security of a force in camp are very similar to those used for protecting a marching column. That is, they consist of small groups or detachments placed between the main body and the enemy, and patrols who continually investigate all ground over which an enemy might advance.

Organization. An outpost thus includes both stationary groups and patrols. The stationary groups are placed as follows: Farthest to the front or nearest to the enemy, is a line of observation, consisting of a number of small groups called outguards. Each outguard posts one or two men as observers and listeners, called sentries. In rear of this line of observation is a line of resistance, including a number of larger groups called supports. These supports furnish the reliefs for the outguards in front of them, and also organize and garrison the line of resistance

for defense. In rear of the line of resistance is the reserve, in one or more groups. In case of attack the reserve performs the usual functions of a reserve in combat, being used to reinforce the line of resistance and for counter attack.

These stationary groups are supplemented by patrols which maintain connection between the various groups and reconnoiter the intervals and the terrain to the front. If in close proximity to the enemy the patrols gain contact with him.

This arrangement will be best understood by studying Plates 379 and 380.

It will be noted that the measures are in accordance with the same principles as those employed for march security, in that they consist of a series of groups increasing in size from front to rear. The outguards correspond to the point, the supports of the outpost to the advance party or support of the advance guard.

A small isolated force in the presence of the enemy may be attacked from front or flanks or even from the rear, as it may be easy to pass around the small area which it occupies. In such a case it would be necessary to place a cordon entirely

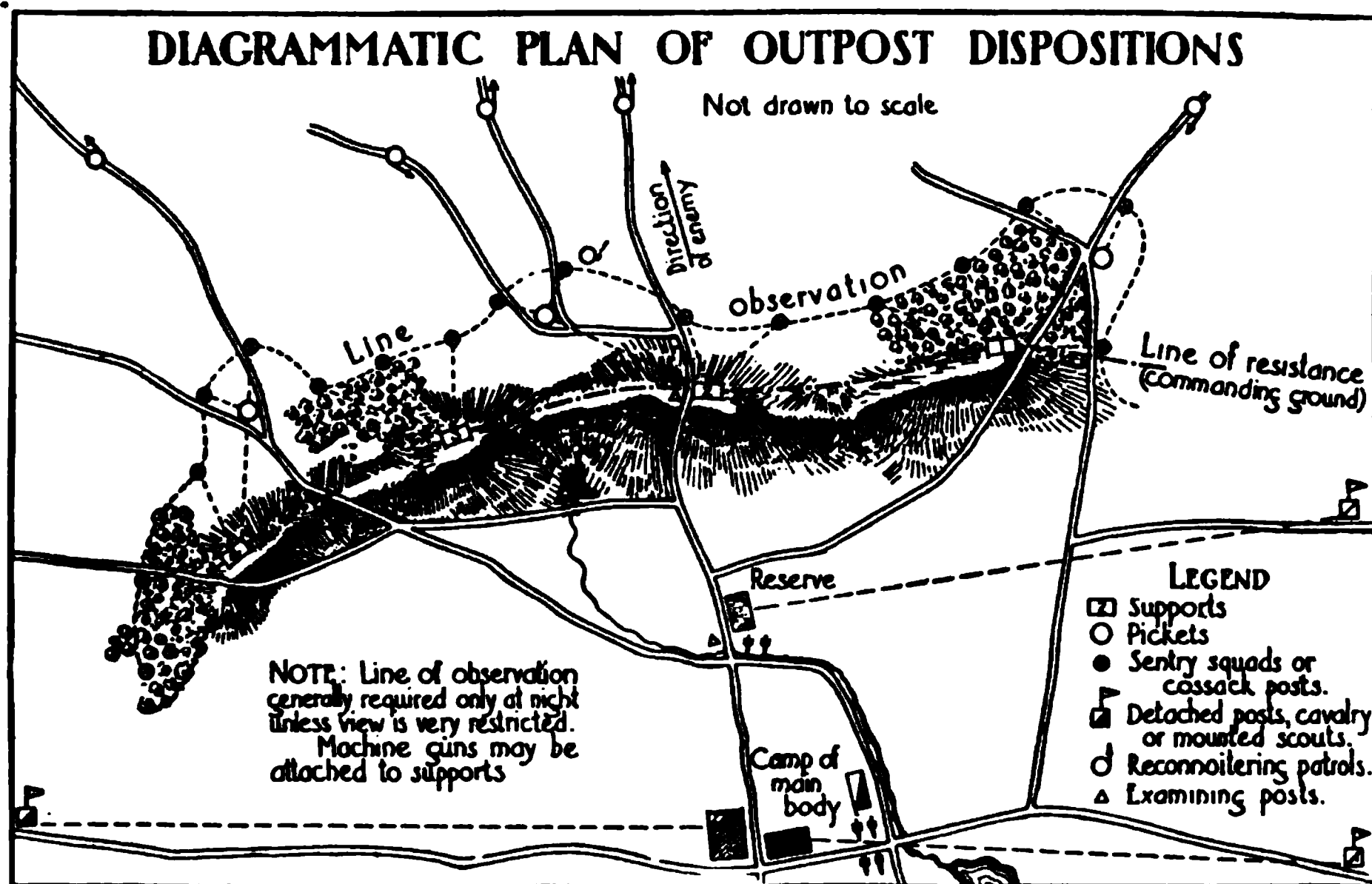


PLATE 380.

around the camp, for example, to repel an attack by savages. This would be an exceptional case. The cordon should always cover the front, towards the enemy, and should be extended to the flanks as far as necessary. If there be other organizations on the flanks they protect both flanks and rear, and the outposts of the various organizations would connect with each other, covering the entire front. In the case of a large unit a cordon covering the dangerous front, with flanks refused or bent to the rear, will ordinarily provide reasonable protection, as a wide turning movement would be necessary to pass around its flank. A hostile force strong enough to undertake such a turning movement would usually prefer the more direct method of a frontal attack.

General duties. The duties of an outpost are to protect the main body so that the troops may rest undisturbed, to screen them from observation, and in case of attack to check the enemy long enough to enable the main body to make dispositions to meet him. The outpost also performs such reconnaissance as may be directed. Often its duty will be to gain touch with the hostile outpost line, when the latter is not too distant, as this is the best possible means of security. In general the duties of an outpost are reconnaissance, observation and resistance.

The outpost should be located at such a distance from the camp as to prevent the enemy from occupying any position from which effective rifle fire might be directed against the troops. In a small command this may not always be practicable, but it is often as much a matter of intelligent dispositions as of mere distance. The line should not be so far out that it will require an unduly large number of men or become too thin to provide reasonable security. If the enemy can be held at a distance of 1000 to 2000 yards during daylight, this will provide reasonable security. The troops should be placed in a sheltered position where they will not be exposed to rifle fire, for example behind a covering crest, or in a wood.

Strength and composition. The strength of an outpost should be the least that will afford reasonable security for the main body. The duty is hard and tires the men, and so we should use no more men than necessary.

The circumstances which chiefly affect the size of the outpost are the size of the command and the probability of a visit from the enemy. If the enemy is known to be near, if he is very strong, if he is "looking for trouble," if he probably knows about us, if the terrain is very favorable for him to approach or attack us, we will evidently need a stronger outpost than where such conditions do not exist.

Usually the outpost will be from $1/20$ to $\frac{1}{3}$ of the total strength of the force. Anything less than $1/20$ could hardly be called an outpost, and anything more than $\frac{1}{3}$ would mean that the troops were practically in line of battle.

The test to be applied to any outpost is: Does it provide reasonable security? Has it more men than necessary?

An outpost, like an advance guard, will be mostly infantry. Machine guns and special troops might be attached to a large outpost. They would usually be with the reserve.

The infantry rifle platoon may be distributed along the line of observation as outguards, it may form a support or part of a support, or it may be used as patrols. It is these duties, then, in which we are especially interested. If it belongs to the reserve the platoon would have no duties unless it were sent out to replace another platoon on the line of supports or the line of observation, or to take part in repelling an attack.

The Component Parts of an Outpost and Their Duties. Outguards.

Outguards are small, observing groups on the line of observation. Each support places such outguards as necessary to properly observe the front or sector assigned to it.

Outguards include: (1) Pickets; (2) sentry squads; (3) cossack posts.

Pickets are usually placed to cover roads or other approaches requiring defense, which cannot be directly covered by the support, from the line of resistance. (See Plate 380.) They usually consist of a section or a platoon. Pickets place their own outguards, if necessary, in the same manner as a support. These would usually be cossack posts and would seldom exceed two in number. A picket, as it is required to offer resistance to the enemy, would usually intrench its defensive position whenever the supports intrenched, unless its situation were such as to make this unnecessary.

Sentry squads consist of complete squads, and provide a commander, three reliefs for a double sentinel, and an extra man, who is utilized to divide the watch with the commander, to carry necessary messages to the support, and to maintain contact along the line of observation by visiting adjacent outguards.

A cossack post consists of a half squad, and furnishes a commander and three reliefs for a single sentinel.

Outguards are posted by the supports, within their own sectors, and the outguards from any one support are numbered from right to left, as "Outguard No. 1 (2, 3), Support No. 1." Pickets are included, but the cossack posts sent from a picket are not included in the support series of numbers. (See Plate 380.)

The principal duty of the small outguards is to give prompt warning of the approach of the enemy. Each is assigned a sector of the front which it observes in the same manner as a sniper's post. (See Musketry.) The station of the outguard should be such as to afford a good view of the sector assigned it, concealment and good communication, preferably by visual signal, with the support, and with the outguards on either flank.

In addition to giving warning of the enemy's presence the outguards prevent the approach of small bodies, by firing upon them, and delay the advance of a larger force. In case of attack they fall back on the support when compelled to do so. They maintain contact with the outguards on each flank. When visual contact is not possible, as in very close country, or at night, arrangements are made for the interchange of signals at intervals, or a man is sent to visit the adjacent outguard to make sure that it is maintaining its position.

The size of outguard to be employed (sentry squad or cossack post) will depend upon the terrain and the situation. If the line of observation is necessarily at a considerable distance from the supports, or if the enemy is close at hand and aggressive, the stronger posts may be advisable. If the outguards are relatively close to the supports, if the country is so close as to require a large number of groups at small intervals, if the sector to be observed is wide in proportion to the strength of the support, or if the danger of a hostile advance is small, cossack posts may be used. Both forms usually are employed in the same support sector if the situation calls for such.

As the two sentinels of a sentry squad are posted together for mutual support their range of vision is no greater than that of a cossack post and they require twice as many men. A sentry squad is more efficient than a cossack post as two men will naturally observe more than one, and each feeling the presence of the other is relieved from the sense of loneliness which affects the sentry of a cossack post. Also a sentry squad, being larger, has more resisting power than a cossack post. The requirements of the particular localities and situation must be considered in deciding which form of outguard to employ. During daylight it may be unnecessary to maintain a double sentry, unless the enemy is very active. In this case one sentry only (in a sentry squad) is posted by day, but both are on duty at night.

An outguard should be thoroughly concealed from hostile observation. The sentries as well as men not actually on duty should be careful to keep out of sight, and avoid unnecessary movement. Observers or sentries may be posted in trees or buildings if a better view or concealment is thus obtained.

Fires, smoking and loud talking are not allowed. No tents other than shelter tents are permitted, and if necessary even these are prohibited.

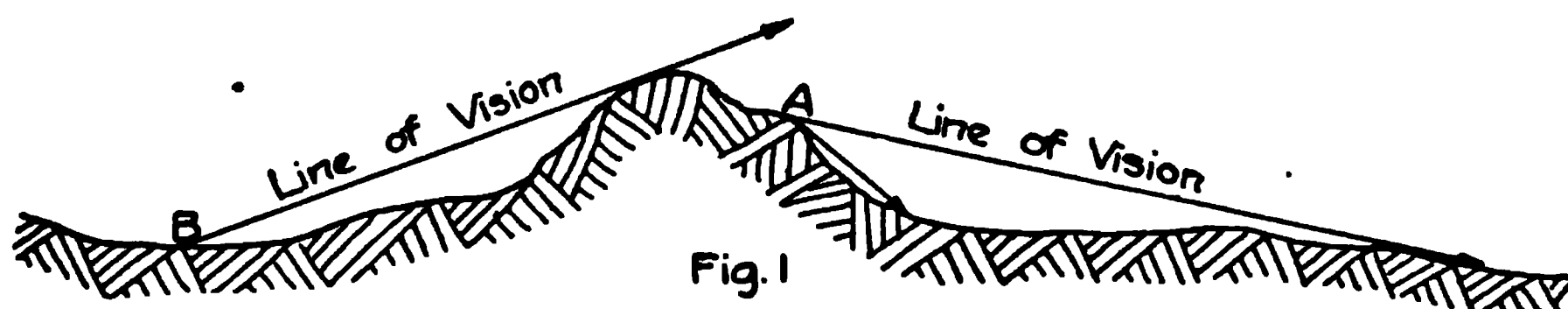
The sentries of an outguard are relieved at intervals, usually every two hours, and three reliefs are provided. Thus the usual tour of a sentinel is 2 hours on and 4 hours off duty in each six. The outguards as a whole are relieved at less frequent intervals, 6, 12 or 24 hours, depending on the nature of the duty, the weather and season. If the situation is such that it is not possible for men on outguard duty to obtain much sleep or rest when not acting as sentries, the outguards should be relieved at 6- or 12-hour intervals. An outguard should not be kept on duty for more than 24 hours except in emergency. The relief of outguards should generally be effected during daylight, either before dusk, or at dawn.

Outguards are not placed as a matter of routine, but only when really necessary. Thus if the line of resistance, or station of the support, is such as to afford a good view of the foreground, as good as or better than could be obtained from positions in advance, it may be unnecessary to place any outguards at all during daylight. An outguard which can see nothing that cannot be seen from the support, or which, as is often the case, can see even less, is plainly adding nothing to security and is a waste of men. The number of outguards should be only such as required for observation.

The foregoing applies only in the daytime. At night (or in fog), observation from the line of resistance is impossible, as it is also from the line of observation. In this case the outguards become listening posts. They are placed at such intervals that it will be very difficult, for even a small patrol of the enemy to pass between them undetected. Additional security is provided by active patrolling.

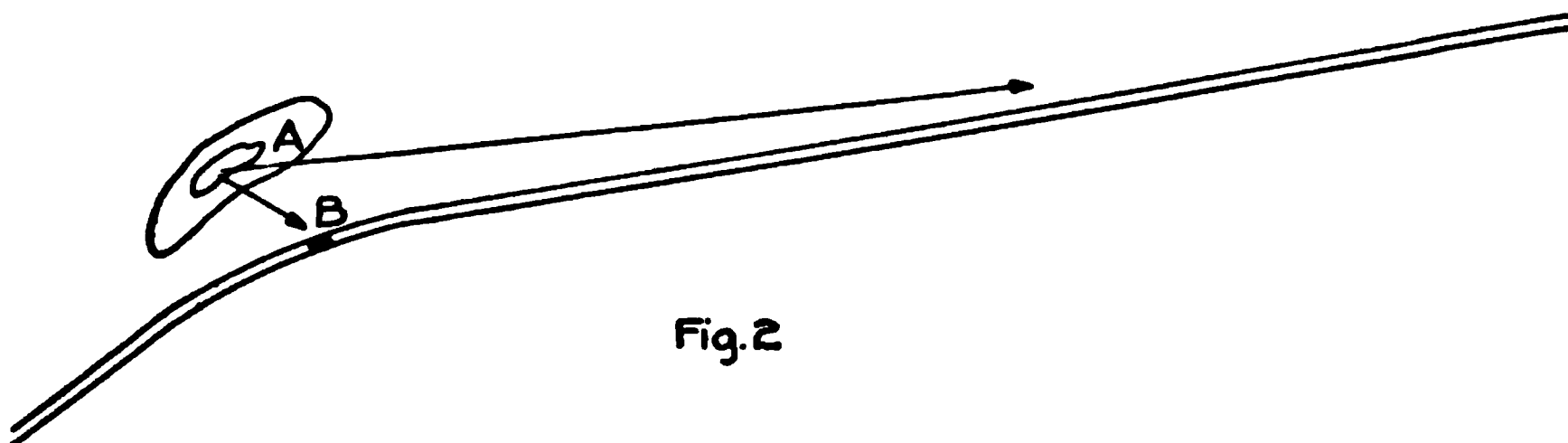
The number of outguards (as well as the activity of local patrolling) will usually be increased by night. An outguard should not be posted during darkness in a locality with which the men are not familiar. The outguards for the night should be sent to their stations and instructed as to their duties, well before dark. They are thus afforded an opportunity to become familiar with their surroundings. If the outguard is to be relieved during the night the new outguard (if not already acquainted with the locality) should also be required to visit it during daylight.

In addition to increasing the number of outguards at night it will also frequently be advisable to change their locations from the day positions. During the day the best view is obtained from commanding heights, crest lines and hill tops, trees and



A-Day position, on military crest.

B-Night position, in low ground affording a sky line.



A-Day position, affording view and field of fire on entire road.

B-Night position, blocking passage.

PLATE 381.—Day and Night Positions of Outguards.

buildings. During the night it will usually be better to occupy the low ground a short distance in rear of a crest, from which the enemy may be observed on the skyline. During the day a road may best be observed and guarded from a commanding position at some distance from the road. During the night it will usually be better to take a position on or immediately adjacent to the road. (See Plate 381.)

When an outpost remains for some days close to the enemy, it will be advisable to occasionally change the positions of the outguards, since if they are known to occupy always the same positions they will be subject to capture by raiding parties.

Duties of sentries. The post of sentry for an outguard is one of importance and responsibility. Each member of an outguard, when on sentry duty, should be informed on the following matters:

1. The number of the outguard, and the number of its support.
2. The position of the support.
3. How to communicate with the support, the best runner route and the line of retreat from the outguard to the support.
4. The locations of outguards on the flanks, how to communicate with them.
5. What friendly troops, such as cavalry, are in front of the outpost.

6. What is known of the enemy on the front, his strength and location, recent activities, when and where he was last seen, etc.

7. Hour at which sentry was posted, and hour when he should be relieved.

8. What routine patrols visit the outguard, how often they come, from what direction, and whither they go.

9. All features of the terrain in the foreground, the names of streams, villages, etc., where roads lead to, places which would afford cover for the enemy, etc.

10. Ranges to all important points.

11. The limits of the sector to be observed by the outguard, with the landmarks which define it.

12. What to do in various emergencies. For example:

a. What to do if enemy is seen.

b. How to give the alarm in case of attack.

c. When to fire on the enemy, as within certain ranges, or when he appears in certain localities.

d. How to challenge persons approaching. How to dispose of them.

e. What to do with deserters from the enemy, or flags of truce.

f. What persons are authorized to pass the outguard, in either direction.

13. Any identification signals or passwords to be employed.

All sentries should be constantly alert, and careful to conceal themselves. Ordinarily they should be certain what they are firing at before opening fire, but individuals who do not halt when directed are fired on before they reach the sentry.

Patrols and individuals who pass an outguard on their way to the front should inform the sentry where they are going, how long they will probably be out, and by what route they will return.

On being relieved a sentry should give his successor any information which might bear on the performance of duty or serve as a guide in emergency.

The outguard commander will inspect his sentries several times during each period they are on duty, to make certain that they are wide awake and vigilant, and conversant with their duties.

All men not on duty should be allowed as much rest as possible.

Meals for outguards are sent forward from the support. No meals are forwarded to sentries—they eat on coming off post.

During daylight each member of an outguard should occupy the sentry post and become familiar with its surroundings, that he may be prepared to perform his duties when posted in darkness.

Outpost Patrols.

The patrols which reconnoiter the intervals and maintain contact between the stationary groups of an outpost are called *visiting* patrols. Those which reconnoiter the terrain to the front are called *reconnoitering* patrols.

Visiting patrols. These usually consist of 2 to 4 men. The reserve sends patrols to make the rounds of the supports, and each support sends patrols to make the rounds of its own outguards and to connect with the adjacent outguards on each flank.

Patrols from the supports pass along the line of outguards, visiting each in turn. Usually they do not go beyond this line, but may make visits to special localities immediately in front of the line. The patrols verify the presence of the outguards at their stations, reconnoiter the intervals, return to the support and report the results of their investigation. These patrols are commanded by a non-commissioned officer or an experienced private. They are sent out at intervals of from 30 minutes to 1 hour, and three full reliefs should be provided. These patrols send no messages, except in emergency, but make report to the officer in charge of patrolling upon completing their round.

The supports may also, when necessary, send visiting patrols at regular intervals, or occasionally, to the adjacent supports on either flank.

The reserve sends visiting patrols, every hour or every two hours, to each support of the outpost or of its particular sector thereof.

Visiting patrols will usually be unnecessary during daylight, when the outguards are within sight of each other, and can see all of the intervals between them. Accordingly, they usually start their rounds at dusk, and continue until daylight. In very close country or in fog, patrolling by day may be necessary.

Visiting patrols should usually approach an outguard from the rear. They exchange information with the outguard on all matters which may be of importance.

Visiting patrols serve not only to gather information, but their continual visits also insure vigilance on the part of the sentries of the outguard.

Both reconnoitering and visiting patrols which are to go out at night, should have passed over their routes by daylight, so as to be familiar therewith.

Portions of the outpost, especially on the flanks, where the danger of attack is small, may be guarded by patrolling alone, supports and outguards being omitted.

Reconnoitering patrols. These are patrols sent beyond the line of observation to reconnoiter in the direction of the enemy and to gain contact with him when prac-

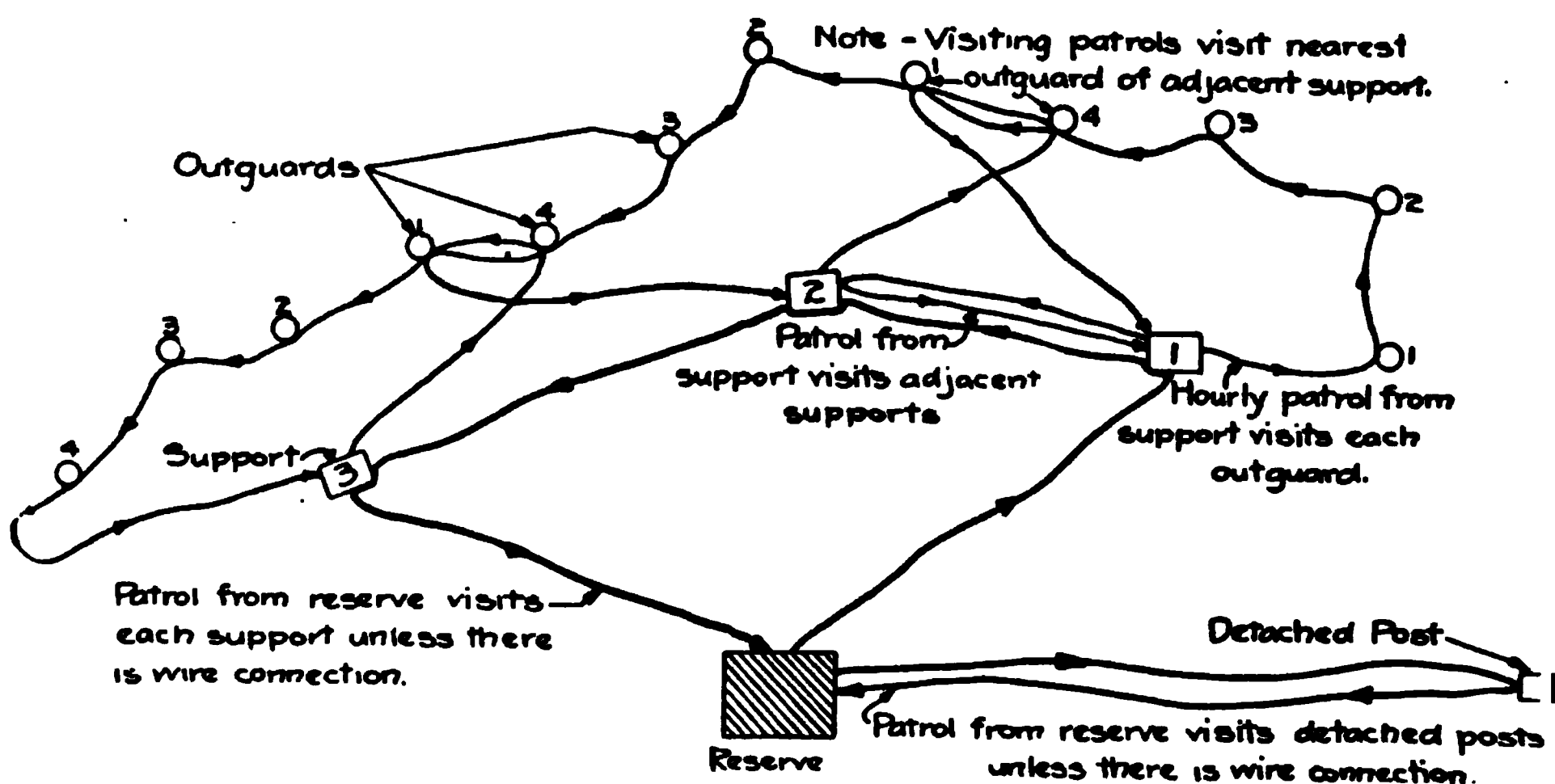


PLATE 382.

ticable. They should generally consist of at least three men, and if sent to a considerable distance (more than a mile beyond the line of outguards), if in hostile country or if messages are to be sent back, the strength is increased. A patrol greater in strength than 8 to 10 men would seldom be employed. They are not required to delay the advance of an enemy, but may have to fight to gain information, or for their own protection. Their operations are conducted in accordance with the principles of Patrolling.

Reconnoitering patrols are sent out by supports to investigate the foreground. These patrols are usually, like visiting patrols, a matter of routine. They should be organized in reliefs, and the round of any one patrol should generally be limited to 2 hours, and should seldom exceed 3 hours. If composed of infantry their rate of travel would seldom exceed 2 miles per hour, in view of the necessity for reconnaissance, occasional halts, etc. Accordingly the distance beyond the line of resistance to which they can go is not over 3 miles and usually less than 2 miles.

The distance to the front to which reconnaissance is conducted will vary with the size and composition of the force. A large force requires more time to prepare to meet the enemy than does a small one, and accordingly should receive earlier warning of a hostile advance. The commander of a large force, upon halting, will usually send a number of mounted officers' patrols well to the front, to reconnoiter

the country and gather information concerning the enemy, as a guide for his future plans. Such patrols are independent of the outpost, as the function of the latter is *security* rather than *information* for future guidance.

Supports.

Supports are the resisting detachments of the outpost, and the reservoirs from which outguards and patrols are drawn. They vary in strength from a platoon to a battalion of infantry, a rifle company being a usual strength except in a small outpost.

Supports are located on the line of resistance, covering the avenues of approach. The supports from each reserve are numbered from right to left, and each is assigned a sector of the front to guard. The divisions between these sectors should not be on or even near the roads. Each support should be responsible for guarding the roads in its own sector. (See Plate 380.)

The support takes a defensive position from which it can best defend its sector, and especially the avenues of approach therein. If the support be a company and its sector not greater than that appropriate to a company in defense, the position may be organized in two lines of combat groups, as in defense. In this case the outpost becomes a defensive position. Almost invariably the front will be too great for organization in two lines, and the defensive dispositions will consist of a single line, organized as in a delaying action. If necessary the entire company is placed on line, and in case of a serious attack is reinforced from the reserve.

Unless an attack is imminent the support remains in a convenient sheltered locality, close to its combat position, with the necessary sentinels or lookouts (in addition to the outguards), but the combat position of each squad should be designated. The orders of the higher command will usually indicate any extensive work in the way of organization of the ground which is to be carried out. In the absence of any specific orders the supports habitually intrench their positions to the extent of constructing individual rifle pits or squad trenches.

If the support is unable to properly cover with fire (from its position on the line of resistance) all the avenues of approach in the sector, it may place one or more pickets in suitable positions to guard such avenues.

Duties of support commander. Having received the orders of the outpost commander designating the troops for the support, its approximate position and the sector to be guarded, the support commander assembles, verifies and inspects his command. He then marches it to the station designated, taking the usual precautions in the way of security (advance guard). Arrived at the location, he places the bulk of his command under shelter and establishes a temporary outpost for his own protection. A few lookouts at favorable points will usually be sufficient. He then informs his command of the situation, and the mission assigned to the support, to guard such sector. (Pars. 1 and 2 of the field order.) He sends out to the front any reconnoitering patrols that have been ordered or that he considers necessary.

He then selects his defensive position, on the line of resistance, and the rest position nearby, determines upon his defensive dispositions, and carries them out, issuing the necessary orders. He next makes a reconnaissance of the foreground, and decides upon the strength and location of the outguards to be posted immediately—usually (at this time) only those which are necessary by day. The first relief outguards are promptly posted and instructed as to their duties, after which the march outpost is relieved. The reliefs for the outguards are designated.

The support commander then visits the supports on either flank, consults their commanders, notes their dispositions, and arranges for any changes that may be necessary to properly guard the front, as in the positions of outguards.

Returning to his own command he inspects it and makes the necessary changes. He deploys the support in its combat position, and sees that each subordinate knows his mission, especially his sectors of fire. He starts the men intrenching under the direction of his subordinates. He organizes the necessary patrols, prescribes their

duties and causes their leaders to pass over the routes designated, during daylight. He selects a command post and causes it to be prepared. He selects positions for additional outguards to be posted during the night, and causes their leaders to pass over the routes to these positions. He designates an officer of the watch and the sentinels for the post of the support. He assigns duties to his subordinate officers and higher non-commissioned officers. He causes an officer or non-commissioned officer to make a sketch showing the dispositions. He sends a runner to next headquarters. He prepares a plan of observation and defense, including a schedule showing the number of men on duty by day and by night.

Having completed the organization of his sector the support commander sends a report of his dispositions, accompanied by a sketch, to his next superior.

The exact order in which these various duties are carried out will depend on the situation and the time of day. If it be near dark when the position is reached, outguards for the night are posted at once, and visiting patrols started on their rounds. The first duty is to provide for temporary observation and security, the second to provide for defense, and the third to provide for complete observation.

Having completed his organization the support commander makes occasional inspections to see that all are properly performing their duties. He may assign certain of his duties to his subordinates.

Each support maintains at its post by day and by night one or more sentinels, to challenge the approach of all persons, and to watch for signals from the outguards, etc.

The Reserve.

The reserve includes all outpost troops not specially assigned elsewhere, and the special troops. It should be posted in a central position where it can readily reinforce any of its supports, preferably on the principal road to the camp of the main body. (See Plate 380.) Concealment is very desirable, also covered approaches to the stations of the supports. Wood and water for the camp are necessary.

The combat trains of the outpost are usually at the reserve camp, whence those of the supports may, in the discretion of the outpost commander, be sent to join them. If an attack is feared the trains may be ordered by the superior commander, to return to the camp of the advance guard (or main body) sometime before day-break the following morning. The kitchens of the supports may usually be allowed to join them and remain at least until after supper, or else until just before day-break, being then withdrawn to the reserve camp. Trains are not allowed with outguards or with supports of less than a company.

It is the duty of the reserve to reinforce the line of resistance in case of attack, and it should be so located that it can promptly reach any portion of this line. In the case of an extended line this cannot be done from a single locality, and local or sector reserves established in such positions as to reinforce any part of the line, will be necessary. As a rule not more than four supports should be sent from any one reserve, or local subdivision of the reserve.

The strength of the reserve is from $\frac{1}{3}$ to $\frac{2}{3}$ the total strength of the outpost.

Frontages, Intervals and Distances.

An outpost is not laid out like a diagram, but its arrangements depend on the ground, the closeness of the enemy, etc. It should be strong at places where the enemy is likely to advance. At places where he is not likely to advance, as where there is a swamp, lake, very dense woods, cliff or some obstacle, it may be unnecessary to place any outguards, only patrols being required. If the enemy is known to be far away we of course do not need as strong an outpost as when he is known to be close at hand.

The following figures will serve as a very general guide to the dispositions of the various parts of an outpost:

Frontage and intervals. The frontage of a unit on outpost, for example the width of a support sector, will usually be more than would be given the same unit

in a defensive position. In average ground across which an advance of the enemy may readily be made, the front covered by a rifle company as support would be about 800 yards, or for a platoon about 250 yards. The frontage of any impassable obstacles, such as a swamp, should of course be subtracted.

At night sentry squads in average terrain would usually be *not* over 300 yards apart, and cossack posts 200 yards. In the daytime these outguards are placed only at the points necessary to command a view of the entire front.

Distances. The distance from the main camp to the outpost line of course increases with the size of the command. The following figures are a fair average:

A company places pickets about 250 to 300 yards from its camp.

A battalion places a company as a support about 500 to 600 yards from its camp.

As to the distances between the parts of the outpost itself the following figures will serve as a guide for *average, open* country:

	Yards
From the reserves to the supports, about.....	1000
From the supports to the outguards, about.....	750
From a picket to its outguards, about.....	400
From an outguard to its sentries or observers, about.....	40

In close country these distances should be reduced.

These figures, and all similar figures given in this course, are not to be regarded as *fixed rules*, but only as *approximations which serve as a guide*. They should be used with *common sense*. Thus we say that a battalion in camp places a company as a support 500 to 600 yards from its camp. This support should be in a position suitable for defense (a ridge, or front edge of a wood, etc.). We will look for such a position about 500 to 600 yards from the place selected as a camp for the battalion. If we find it at 400 yards or at 700 yards either would probably be satisfactory. But if the defensive position is only 200 yards from camp, or as much as 1000 yards, this would not be satisfactory, and we should consider changing the position of the camp, so as to place it at the proper distance from the outpost line. The location of a camp will often be chiefly decided by the outpost facilities. That is to say it will often be wise to first pick the outpost line and then locate the camp at the proper distance.

Locating the Outpost.

Roads will exercise a great influence upon the location, as they are the lines by which the enemy must advance in a movement in force, especially at night. A good, general rule is as follows: Select the main route leading towards the known or supposed position of the principal hostile force in the locality; place a strong support to command this route; and make the rest of the outpost conform to this disposition, other supports covering other avenues of approach, with detached posts or patrolling to guard less dangerous routes. Resisting detachments (supports) in good defensive positions on the principal avenues of approach, with active patrolling between, are the essentials of reasonable protection. (See Plate 380.)

The resisting detachments must of course be placed in good defensive positions, and nearly on the same line. Accordingly the line of resistance would approximately correspond to the firing line of a battle position in the same locality.

If in retreat, or when it will not interfere with contemplated offensive operations, it is of course an advantage to have an impassable obstacle covering the front, or a portion of it. For example, if the front be covered by a large stream, resisting detachments at the bridges, with active patrolling of the intervals, to prevent the enemy using ferries or hasty bridges, will suffice for security. The duty may be further lightened by disabling some of the bridges.

Minor lines of approach are covered by small supports, pickets or outguards. The dispositions generally should be such that small bodies will have difficulty in filtering through, and large ones cannot advance without being promptly detected

and delayed. Parts of the front when the danger of attack is great are strongly held, other localities in proportion to the probable danger.

A small outpost, or the details of a large one, should always be located on the terrain, as it is unsafe to determine such locations from a map alone.

Orders.

Orders for the outpost are usually given with the "halt order" for the end of a march. Such orders are called "halt and outpost" orders.

The supreme commander designates the troops for outpost duty and the general line to be held. The outpost commander and his subordinates proceed to the place designated and issue their own orders after they have looked over the ground.

The following is an outline of the order which might be issued by a support commander. The support would be marched to the vicinity of its station when the commander would issue his order to his subordinates in sight of the ground to be occupied:

"No additional information of the enemy.

"Our regiment camps for the night at ———.

"The advance cavalry is covering our front, but withdraws behind the outpost line at 7:30 PM.

"Co A has established a march outpost on that crest yonder.

"There is a detached post from the main body on that hill yonder on our right.

"Support No 2 is at ———, and guards the sector on our left.

"This company with a section of machine guns constitutes Support No 1. We take post here, and guard the sector from ——— (inclusive) to ——— (inclusive).

"The 1st Sec 1st Plat will form Outguard No 1. It will take post at ———, and establish contact with the detached post on our right.

(Orders for other outguards, the picket on the left to establish contact with the right outguard of Support No 2.)

"The 3rd Plat will detail two visiting patrols, each of two men, with three reliefs, and one reconnoitering patrol of three men with three reliefs, who will report to Sgt X for orders. A visiting patrol will be sent each hour to visit Outguards Nos 1 to 3 (inclusive), and one each hour to visit Outguard No 4 to right outguard of Support No 2 (inclusive). A reconnoitering patrol will be sent once each hour east on the ——— road for 1 mile.

"The remainder of the company, under Lt A, will intrench here on the line that I will indicate.

"The machine guns will occupy and intrench a position to cover the front of the company and to sweep the ——— road.

"The company command post will be at that house.

"Outguards move to your posts, I will inspect the line of observation in about half an hour."

The support commander will give subsequent orders as to intrenching the position, time patrols are to start their rounds, meals, fires, tent pitching, etc.

It would be seldom that outpost orders would contain *all* the information and instructions in the foregoing form. On the other hand under certain conditions special instructions might be required. The forms indicate the subjects that should be considered. Not all of these need, in the usual case, be covered by the orders.



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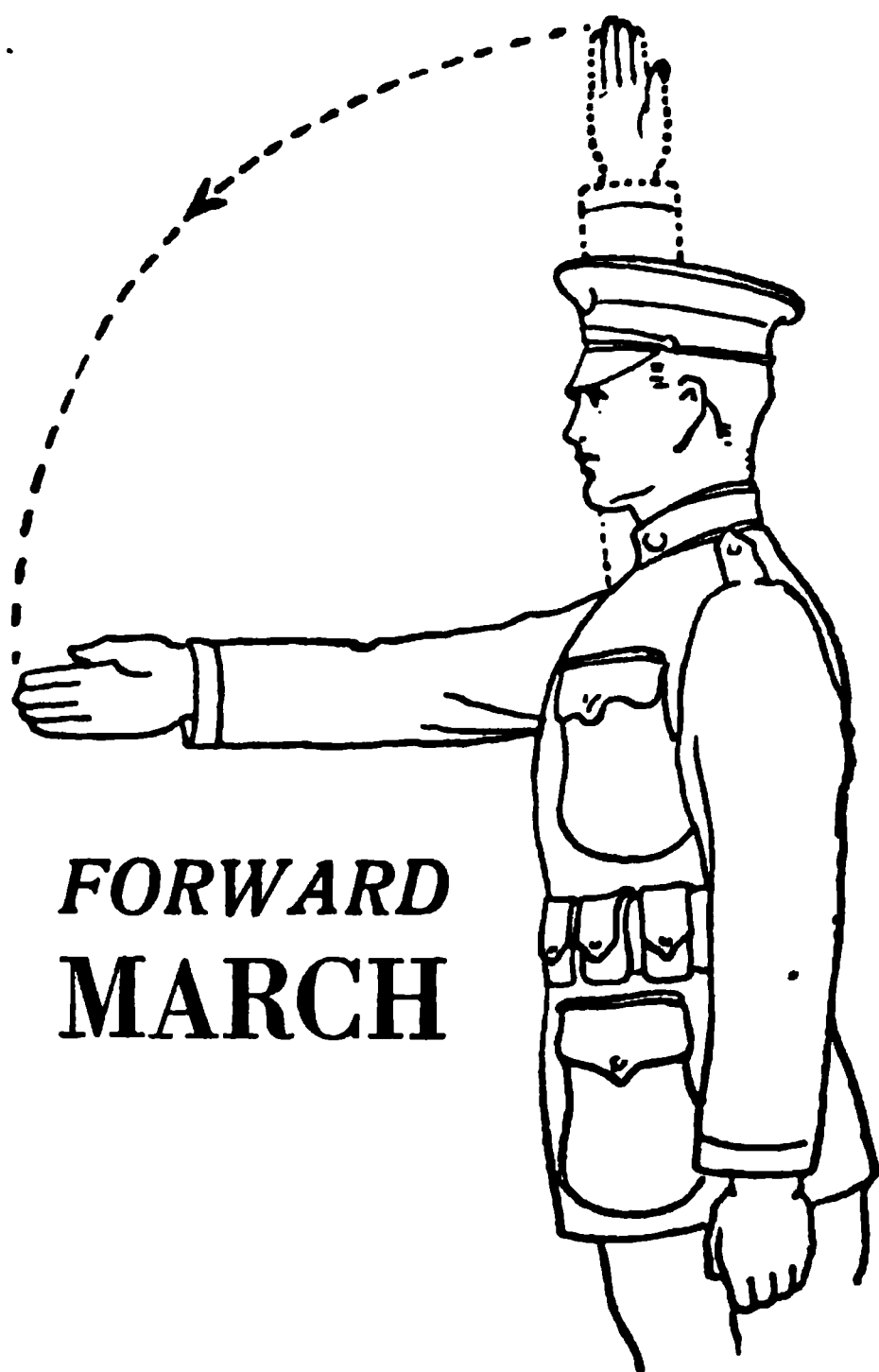
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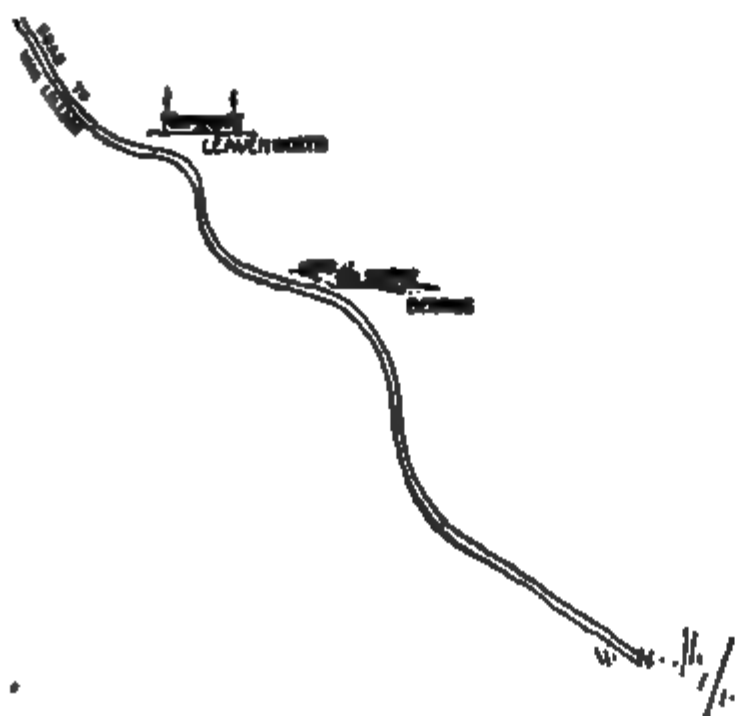
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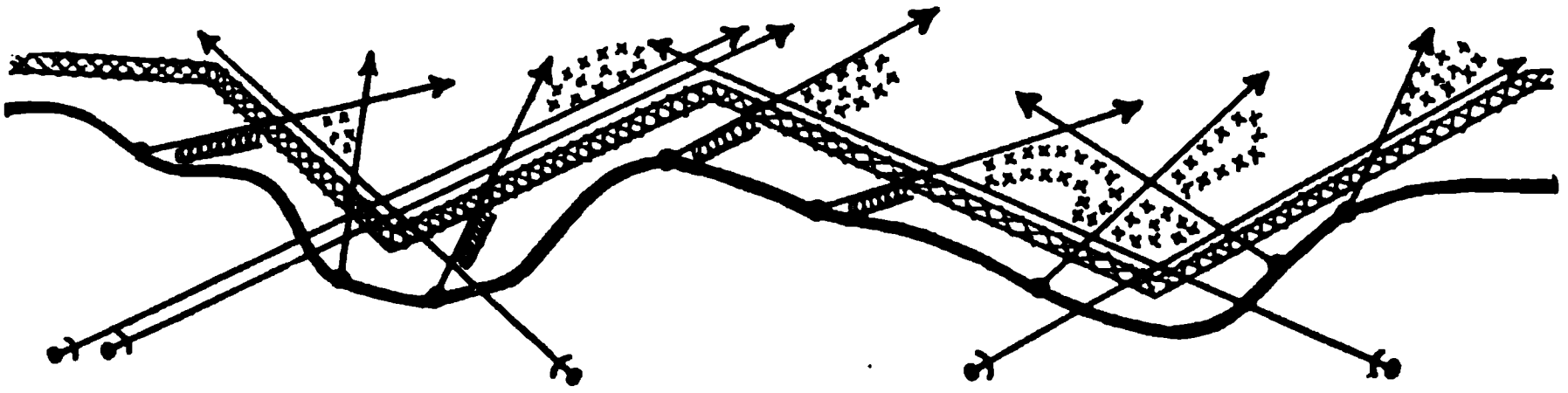
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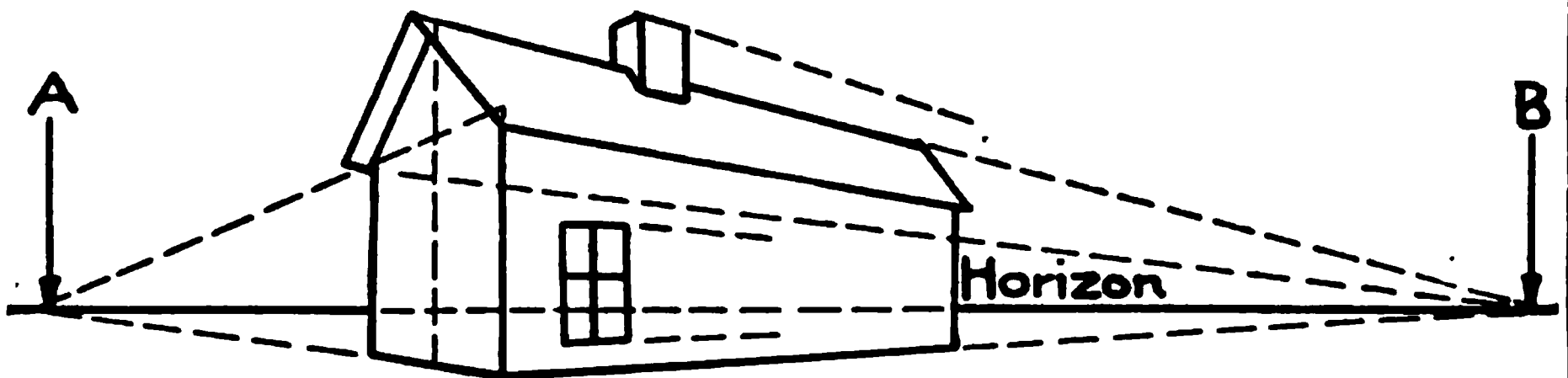
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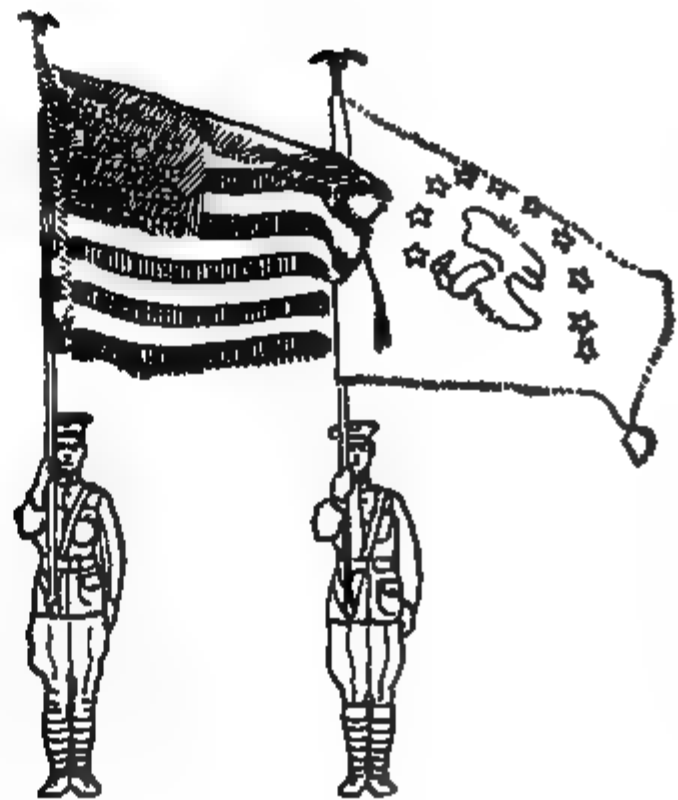
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